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THE WIA RADIO AMATEUR'S JOURNAL

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### Cover

This month's somewhat fanciful cover takes a whimsical look at one aspect of amateur radio. Photo by courtesy of Vicki Marsden VK2EVM.

## EDITOR'S COMMENT

BILL RICE VK3ABP EXECUTIVE EDITOR

### A Progress Report

It's that time of year again when someone (guess who?) has to write a page or two entitled "Annual Report of the Publications Committee" to be presented to the Federal Convention in April. In effect, we now have four Federal Conventions each year, but since it has the status of an Annual General Meeting, the April convention still occupies a special place in the Institute's calendar.

Members are free to visit the convention and learn more about the management of the WIA if they wish. Few do, and in view of the routine, if not actually boring, nature of the proceedings, this is entirely understandable. Along with many other reports from Federal committees and office bearers, the Publications

Committee report is published in this issue of *AR*, so you don't have to be at the convention to read it. However, it refers only to the year from January to December 1990.

Since we are now a third of the way into 1991 I thought you might like an updated report, and perhaps a bit less formal. In order to write both these reports I have referred to the minutes of the monthly Publications Committee meetings, but mainly to jog the memory. Unless you were there, the minutes seldom tell the full story. To do so, they would need to be a verbatim account of everyone's remarks. We don't have the facilities or the budget of Hansard, so that's impractical.

One of the most common themes in the minutes is the supply of technical articles.

Closely related is the supply of suitable colour photographs for the front cover. We are dependent for these, particularly the articles, on you, our loyal and patient members. *AR* is YOUR magazine! We prefer not to reprint overseas articles, but sometimes one may stand out by its excellence; or appropriate local articles may be in short supply, or, for various reasons, not quite ready to publish.

Sometimes it takes months to process an article from receipt to typesetter, and our team of technical editors are all busy people who can seldom work miracles! At present we have between 30 and 40 technical articles "in the mill". If yours is one of them, be patient for just a little longer! The same goes for cover pictures sometimes. The rather whimsical cover of this issue has been waiting for a couple of years to be used, and an April issue seemed appropriate.

Future planning is another

recurrent theme in the minutes. In order to give you the type of articles you want, we must find out what you want, and how much of each type. Then we must ask the authors among you to write articles on this or that specific theme. A four-person sub-committee has sought this information and put it all together over the past few months, and its published guidelines are now beginning to shape our advance planning.

Every month there is a financial report by the General Manager who, over the years, has developed computer programs for detailed analysis of every aspect of WIA finances. This has permitted close control of our costs, and in fact the magazine production cost has not changed significantly for several years. The only area showing an unfavourable trend is advertising. Due to the present recession, less people have money to spend, and more dealers are "feeling the pinch". Even so, several

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

## Wireless Institute of Australia

The world's first and oldest National Radio Society - Founded 1910

Representing the Australian Amateur Radio Service - Member of the International Amateur Radio Union

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Intruder Watch:	Gordon Loveday	VK4KAL	WICEN:	Leigh Baker	VK3TP

new advertisers have been persuaded to "give AR a try" over recent months.

Because of the need to restrain costs in the face of recession, we have had to reduce the number of pages (just 12 months ago). We think that the standard of our magazine is nevertheless at least as good as at any time in recent years, and all committee members remain keen to make further improvements whenever possible.

We would like more people on the committee, to replace those who cannot stay forever! As your Editor for nearly seven years, I would like to retire. One of our members was a candidate for Assistant Editor, but has now left the committee to become even more valuable as Assistant Manager of the Executive Office.

One final update. Back in

February I referred to a need for a book, or a selection of books, to provide all the information a complete beginner needs to be able to pass the Novice exam. Two people responded with information about books already available. Rex Black VK2YA pointed out that at least two books which were published by the now-disbanded Youth Radio Scheme are still available from the VK2 Divisional Bookshop. From the Amateur Radio Examinations Centre, of Mandurah 6210, came a recommendation for *"The Novice Operator's Theory Handbook"* by Scott and Bruce Smith, available from the authors (VK2KE and VK2AD). Nevertheless, I am sure none of their authors would disagree with a claim that these books were written many years ago and do need at least some rewriting. Who will volunteer? **ar**

## WIA NEWS

FROM THE WIA EXECUTIVE OFFICE

### Discussions with DoTC

The President of the WIA, Peter Gamble VK3YRP, and the General Manager, Bill Roper VK3ARZ, spent an exhaustive day in Canberra on 14th February. Meetings were held in the morning with the Manager of the Licensing Section of DoTC, and in the afternoon with the Assistant Secretary of the Radio Communications Section. Both meetings were intensive and productive. Matters of long-standing concern were addressed, as well as many items

relating to the future functioning of the amateur service.

### Japanese Amateur Minister of P & T

The JARL News for January 1991 announced the appointment to the position of Minister of Posts and Telecommunications of Mr Katsutsugu Sekiya, JA5FHB, a member of the Japanese House of Representatives. Mr Sekiya has been an amateur since 1970, and is one of the founding members of Diet Ham Club, JG1ZQU, which

## WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers	Weekly News Broadcasts	1991 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Ted Pearce Secretary Jan Burnell Treasurer Ken Ray	VK1AOP 3.570 MHz VK1BR 2m ch 6950 VK1KEN 70cm ch 8525 2000 hrs Sun	(F) \$67.50 (G) (\$54.00 (X) \$40.50
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1064 Parramatta) 2124 Phone (02) 689 2417 Fax (02) 633 1525	President Roger Henley Secretary Tim Mills Treasurer David Horsfall (Office hours Mon-Fri 1100 - 1400 Wed 1900 - 2100)	VK2ZIG 1.845 MHz AM, 3.595 AM(1045) SSB (1915 only), 7.146 AM (1045 (F) \$65.00 VK2ZTM only) 10.125 SSB (1045 only), 28.320 SSB, 52.120 SSB 52.525 FM (G) (\$52.00 VK2KFU 144.12 (SSB), 147.000 FM(R) 438.525 FM(R) (X) \$38.00 584.750 (ATV Sound) 1281.75FM (R) Relays also conducted via many repeaters throughout NSW.	
VK3	Victorian Division 38 Taylor St Arlington Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hallay Office hours 0900-1600 Tue & Thur	VK3PC 1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon, (F) \$69.00 VK3XV 147.225 FM(R) Mt Baw Baw (G) (\$55.00 VK3XLZ 146.800 FM(R) Mildura, (X) \$42.00 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Murray Kelly Secretary Eddie Fisher Treasurer Eric Fittock	VK4AOK 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400, (F) \$67.50 VK4ABA MHz (G) (\$54.00 VK4NEF 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday (X) \$40.50 Repeated on 3.605 & 147.150 MHz, 1930 Monday	
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Rowland Bruce Secretary John McKellar Treasurer Bill Wardrop	VK5OU 1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 145.000, (F) \$67.50 VK5BJM 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) (G) (\$54.00 VK5AWM South East, ATV Ch 34 57.900 Adelaide, ATV 444.250 Mid North (X) \$40.50 Barossa Valley 146.825, 438.425 (NT)3.555, 146.500, 0900 hrs Sunday	
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 388 3888	President Alyn Maschette Secretary John Farman Treasurer Bruce Hedland Thomas	VK6KWN 146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, (F) \$59.00 VK6AFA 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz Country relays 3582, 147.350(R) Busselton 146.900(R) Mt William (G) (\$47.50 VK6OO (Bunbury) 147.225(R) 147.250 (R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker Broadcast relayed on 3.560 at 1930 hrs. (X) \$32.00	
VK7	Tasmanian Division 148 Derwent Ave Lindisfarne TAS 7015	President Tom Allen Secretary Ted Beard Treasurer Peter King	VK7AL 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (F) \$65.00 VK7EB (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, (G) (\$52.00 VK7ZPK 144.100 (Hobart) Repeated Tues 3.590 at 0930 hrs (X) \$38.00	
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three year membership available to (F) (G) (X) grades at fee x 3 times
Note: All times are local. All frequencies MHz.				

includes 21 members of the House of Representatives among its members.

## ITU Seminar

The same JARL News gives notice of an ITU Seminar for amateur radio administrators to be held in Tokyo from 8th to 13th April 1991. The program ranges from the history of amateur radio through regulation and disaster communications to modern communications techniques. The Seminar is sponsored by ITU, the Japanese Amateur Radio League and the Japanese Ministry for Posts and Telecommunications.

## Packet Operators Risk Fines

The American Radio Relay League (ARRL) reports that a number of packet radio operators have been served with violation notices by the Federal Communications Commission (FCC). This action was taken as a result of an item relayed on BBSs which was claimed to be "facilitating business issues" and to have nothing to do with amateur radio. The FCC has stated that "each BBS SYSOP is personally responsible for the 'correctness' of all messages merely passing through his system". This official attitude may have repercussions among Australian amateurs.

## The End of Heathkit

A recent ARRL Letter reports that the Heath company has left the kit business and will now concentrate on home-study courses, home automation equipment and assembled units.

The end of an era.

## Callsigns of Deceased Amateurs

The current DoTC policy on re-issue of callsigns after the death of a holder has been to delay the re-issue for a period of two years, unless the con-

sent of the next-of-kin of the deceased is received in writing.

The WIA strongly supports this policy, although regretting that the delay period was reduced some time ago from five to two years.

It is disturbing to learn recently of several instances where the families of a deceased amateur have been harassed shortly after the death by strangers to the family anxious to gain a particular callsign, especially if it is a two letter call.

This is a most impertinent and ill-mannered intrusion into a family's private affairs.

Radio amateurs are asked to be patient and considerate in these circumstances.

## More Morse

As stated last month, the WIA supports the Morse code training sessions supplied by the Divisions, and appreciates the dedication and expertise of those who provide other regular training schemes.

One of these is the service provided by Len VK3COD, who conducts a Morse code school of the air every evening, Monday to Friday, from 8.30 pm, on 147.425 MHz and 28.340 MHz. Len provides slow Morse for the first half hour, then a half hour of faster Morse. Many amateurs have found this cost free service a relatively painless and effective method of learning Morse, or of raising their speed to the examination standard.

## Schedule of WIA Member Services

After some months of extensive work and discussion with Divisional representatives, Ron Henderson VK1RH was able to table a draft document at the February 9th and 10th WIA Executive meeting about the provision of member services by the WIA Federal Body or by the WIA Divisions.

It is hoped to provide an outline of this schedule as a separate news item in the

future, but it has been arranged to identify the services provided by level, in order of priority, and by whether or not they involve extra charges to the members.

The intention throughout was to ensure efficient service to members and ease of access by members, without wasteful duplication of resources. The Executive meeting was pleased to adopt Ron's paper with only minor modifications.

## Band Plans for 2.3 GHz and Above

The proposed band plans for these frequencies were published in the October 1990 issue of Amateur Radio magazine. As no objections or amendments had been received or proposed, it was recommended to the Federal Council meeting on 10th February 1991 that the proposed band plans for the frequencies of 2.3 GHz and above be adopted.

The motion was carried.

## Working U2MIR on Packet

We have previously reported that a number of Australian amateurs are working or attempting to work the Russian Space Station U2MIR via packet.

However, from reports received, there has been a bit too much enthusiasm on the part of some amateurs, to the extent that the system has become jammed so that very few stations are connecting to U2MIR.

If U2MIR is already connected to a station, or has the PMS or digipeat function turned off, continuous connect requests, beacon and unproto texts, and digipeat tries only serve to increase congestion on the frequency and make U2MIR operation very difficult.

Please observe the frames returning from MIR and determine if a connect is possible before calling.

## IARU Region III Conference

As previously noted there is to be a Region III conference in Bandoeung in October 1991. A copy of the initial agenda was received this week from Masayoshi Fujioka JM1UXU, the Secretary to the International Amateur Radio Union Region III Association.

Apart from the normal procedural and internal Association items, there will be discussion on both policy and operating matters.

Policy items listed include:

1. Review and revision, if any, of the existing band-plans for HF, VHF and UHF
2. Use of amateur bands in Region III - HF new bands 10,18 and 24MHz; VHF, UHF and SHF
3. International Telecommunications Conferences and Events - preparation for WARCs; participation in CCIR meetings; Telecom '91 (Geneva, Oct. 91)
4. Changes to the Administration of the Radio Frequency Spectrum
5. Funding of IARU Activities
6. EMC/CISPR
7. Amateur satellite - amateur satellite usage; IARU Satellite Activity Co-ordinator
8. Promotion/Development of amateur radio
9. Formulation of call signs
10. Region 3 News.

Operating items listed include:-

1. IARU Monitoring Service - Report by Regional Co-ordinator; Review and Future activities
2. International Beacons - International Co-ordination and Co-operation; Beacons on 28 MHz, 21 MHz and 14 MHz
3. Amateur radio Direction Finding (ARDF)
4. Relaying of messages by Amateur stations
5. Contest
6. QSL Cards and QSL services - Format of QSL Cards; QSL services (Operation

## of QSL Bureau)

### 7. Packet Radio (Regulations and Operation)

It is a long agenda. Obviously the WIA delegates will have a few very full days. If you believe that you have useful comments, information or suggestions about any of the items listed on the agenda, now is the time to be contacting your WIA Division.

## Club Stations for

### Antarctica

A letter from DoTC Licensing confirms an agreement between the WIA and DoTC that Club station licences may be issued to facilitate amateur operations within Antarctica. Applications for such licences should be submitted in the first instance to the Hobart, Tasmania office of DoTC.

## Any

## DX

## ATVers?

A letter received recently from a G4 amateur asks if there is anyone in Perth, Adelaide or Sydney who might be able to send some slow scan TV to the UK. The aim is to gain some publicity for both amateur radio and a sporting team from Bedford High School who will be playing in those cities during July 5th to 24th 1991.

The letter has been circulated to the VK2, 5 and 6 Divisions so, if you are interested, and can help, please contact the appropriate Division for further information, or write direct to Philip M. Steele, G4PMS, 107 Lower Shelton Road, Marston Moretaine, Beds, MK43 0LP ENGLAND.

## Norfolk Island Special Stamp Issue

A News Release from the Norfolk Island Philatelic Bureau announces the issue of a "Ham Radio" stamp series to acknowledge the importance of amateur radio in the

communications systems of Norfolk and Pitcairn Islands. There are three stamps in the series. The 43c shows a map of the Island, the \$1 shows Norfolk Island in relation to Antarctica, and the \$1.20 shows the Island in relation to Australia and New Zealand. In each, the background is a listing of callsigns.

The First Day Cover envelope shows a collection of QSL cards. The issue has been produced on the suggestion of Kirsti and Jim Smith of the Heard Island DX Association.

## Interference to Baby Monitor

The ARRL Letter of 21st February 1991 reports on the activities of K3LR and WB3KKK in determining factors causing interference to an infant apnea monitor. The original suspicion was that a nearby amateur station was causing the monitor to emit false alarms, but investigation disproved this, indicating that the problem was mainly lack of shielding. Action is now being taken to ensure that a type approval system is arranged for future models, and that they are adequately shielded.

The assistance offered by the two amateurs has changed the attitude of the parents to amateur radio in general.

## VK3 QSL Bureau

A considerable stir has been caused in international amateur radio circles by the publication, in at least two widely distributed journals, of a letter from a Victorian amateur with a grudge against the Division. The letter claimed that the VK3 Division was not processing or distributing incoming QSL cards, and that "all incoming cards are being burnt".

Several other organisations also received the letter, but checked with the WIA before publishing it and accepted the WIA's advice that the claims

were totally false.

Legal action is pending where the published letter is causing damage to the VK3 Division. The following statement from the WIA, Victorian Division in response to one of the original queries makes the situation plain:-

"All amateurs are assured that the WIA Victorian Division Inwards QSL Bureau is operating efficiently within the guidelines of the IARU. The WIA Victorian Division Inwards Bureau operation is fully computerised and cards are handled and distributed by paid staff. Cards for both WIA members and non-members are accepted. Cards for members are processed and distributed as a free membership service, and cards for non-members are made available for collection without charge, or they may be distributed in the same manner as member's cards for a nominal charge.

The address for all Inwards QSL cards to the VK3 area is:-  
VK3 Inwards QSL Bureau,  
Box 757 G,  
GPO Melbourne 3001."

## JARL Ham Fair 1991

The annual Japanese Amateur Radio League (JARL) sponsored "Ham Fair" will be held at the New Hall of the Tokyo International Trade Centre at Harumi, Tokyo, from Friday 23rd August to Sunday 25th. Last year's fair attracted 59,000 visitors. This year's promises even more interest with a special commemorative station, 8J1HAM, in operation. Visitors will be welcome.

## New Column in Amateur Radio

The April issue of Amateur Radio magazine introduces a new monthly column, "Knutshell Knowledge", prepared by Graham Thornton VK3IY, our Managing Editor, in his spare time!

It includes abstracts of a range of useful notes and ar-

ticles from the magazines which come into the Executive office, and which may be of interest to members. Arrangements are being made for supply of copies of the articles for a small fee for the individual personal use of WIA members.

Check it out now - you may find just the item you have been seeking.

## Recruitment

Statistics tabled at the February 1991 weekend meeting of Executive showed that of the 566 new members enrolled during 1990, 169 were recruited as a result of the Executive Office campaigns.

Most of these new members had requested recruitment or information packages either directly or by returning a printed slip from WIA advertisements in other magazines. This method of attracting new people to amateur radio and to membership of the WIA works but is not highly cost effective.

As has been said before, the most effective and cheapest recruiting method is by direct contact between member and non-member.

## Divisional Bookshops

Members will have noticed that the WIA is now publishing a full list of books and other items available from your Division on the inner back cover of Amateur Radio magazine.

Not all items listed may be in stock at your Divisional Bookshop. However, if the item is carried by your Division, it can be ordered in with minimum delay.

Please note that Divisional Bookshop items are not available to members direct from the Executive Office.

There are some items listed, such as badges, ties and T-shirts which have been on hand a long time and have a slow turnover. Are there other items members would like made available? How about a set of WIA cufflinks, or mugs,

*Continued on page 6*

# A Sweep Generator

## To Plot the Response of IF Filters and IF Channels

LLOYD BUTLER VK5BR  
18 OTTAWA AVE  
PANORAMA 5041

### Introduction

**I**N THE MODERN communications laboratory, exotic spectrum analysers are normally available to accurately plot the response of IF channels and those special crystal element filters used to shape the response of the channels. Such expensive test equipment is not often available to the average radio amateur, but if he becomes involved in assembling his own filters, or performance checking of receivers, some simpler form of test equipment might be sought. Because of this, the writer made an effort to design a simple sweep generator which could be used in conjunction with the radio shack cathode ray oscilloscope (CRO) to plot the response. The objective was to make a generator which could operate over a range of frequencies which included 455kHz and higher IF channels such as 9MHz and 10.5MHz. The task seemed simple enough if made to operate at one frequency, but a little more thought was required for the instrument to operate over a wide range of frequencies.

The finalised circuit makes use of a frequency modulated oscillator of fixed centre frequency which is heterodyned with an external variable RF signal source. This assumes that the user has some form of signal generator for general use in the radio shack. Before getting to this stage, a number of other circuit designs were made to operate. Whilst these were eventually put aside, their operation is of interest and they will be discussed before introducing the heterodyned circuit.

### Basic Sweep Generator

A basic system for the sweep generator is shown in figure 1. A low-frequency

sawtooth wave is generated from some form of oscillator or waveform generator. The instantaneous voltage of the sawtooth wave controls the frequency of an RF oscillator with its centre frequency set at the centre frequency of the device under test (filter or IF channel etc). Over a single sweep of frequency, RF output voltage from the device, as a function of time, is a plot of the filter response. By rectifying and RF filtering in a simple AM detector, the output is converted to a DC voltage varying as a function of time and this voltage is applied to the vertical input of the CRO. By synchronising the sweep of the CRO with the sawtooth output, the device response is plotted on the CRO screen.

### The Sawtooth Generator

Various circuits could be chosen to generate the sawtooth waveform. The main requirement is that the oblique part of the wave should be as straight as possible to maintain linearity of the frequency sweep. It is also important that the sawtooth frequency be as low as possible. The reason for this is that we are frequency modulating the RF oscillator and FM sidebands are created. The greater the modulating frequency, the wider the band of side frequencies of significant level. If the significant sidebands are too wide, the resolution of detailed perturbations (bumps and kinks) in the plotted response curve is degraded. It also follows that the sidebands increase in bandwidth as the frequency deviation is increased, hence resolution is lost as sweep range is increased. For best resolution of the response plot, the

sweep frequency range is set to just beyond the width of interest.

For the writer's experiments, a waveform generator type XR205 was used. The circuit detail is included later in the complete heterodyned system circuit, figure 6. A useful feature of the XR205 is that it feeds out short synchronising pulses which can be used to lock in the time base of the CRO. As an alternative, the XR205 can also accept synchronising signals so that, if desired, the CRO time base can be used as the controlling element in the system.

The sawtooth frequency was set to 33Hz. If a much lower frequency than this is used, the persistence of vision problem arises to produce a waveform flicker on the CRO trace. Even at 33Hz, this is slightly apparent but tolerable. At this low frequency, quite large coupling capacitors must be used to prevent waveform distortion and subsequent loss of frequency deviation linearity.

### A Frequency Modulated Oscillator

A simple way to achieve frequency modulation of an RF oscillator is to make use of a voltage variable capacitor connected across its tuned circuit. Modulation voltage is applied to the capacitor via a circuit which blocks the RF component. The variation in shunt capacitance achievable with the voltage variable capacitor is fairly small, and initial thoughts were that, for a wide tuning range, using a large variable tuning capacitor, it might be better to use a reactance transistor stage. As a result, the circuit of figure 2 was made to operate over a tuning range

### WIA News (continued from page 5)

or spoons? If you think there are items you would like to be available, please let us know so that arrangements can be made.

### 1991

### Federal

### Convention

The 1991 Federal Convention of the WIA will be held at the Brighton Savoy

Hotel/Motel in Melbourne on the weekend of 20th and 21st April 1991.

Elsewhere in this issue of Amateur Radio magazine is published those WIA annual reports which were received at the Executive Office prior to the printing deadline (the legal closing date for receipt of reports to be included in the 1991 Federal Convention was 20th March 1991).

These reports make interesting reading.

Do you feel strongly about the WIA and the future of amateur radio as a leisure time activity? Do you want your views represented at the 1991 Annual General Meeting of the Federal WIA?

Then make sure you contact your Division or your Divisional Federal Councillor prior to the Convention so that your views can be represented.

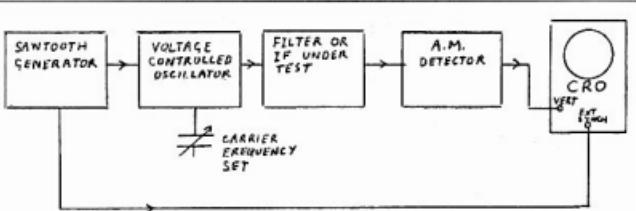


Figure 1 Sweep Generator used to plot response of IF filter or IF channel

of 400kHz to 1.3MHz. In this circuit, there is no passive tuning inductance, and the inductive reactance for Colpitts oscillator V2 is formed by reactance stage V1.

The circuit operates as follows: Resistance R1 is large compared to the capacitive reactance of C5 and hence the RF current through R1 and C5 is essentially in phase with the voltage at V1 output and oscillator tuning capacitors C9-C10. Since C5 is a capacitor, the current through it is 90 degrees out of phase with its voltage, and hence the voltage applied to the V1 transistor gate. As there is a phase reversal from input to output of the amplifier stage, the RF current through the transistor, resulting from the RF voltage on its gate, is of such a phase as to make it appear as an inductive reactance across C9 and C10. The effective inductance is controlled by the RF voltage across C5 and hence its value of capacitance. The centre frequency is thus set by the value of C5, which is used to tune over the range of 400kHz to 1.3MHz.

Over a narrower range, the inductive reactance across C9-C10 is also controlled

by the V1 stage gain, which in turn can be varied by the reference voltage at its gate. By feeding the sawtooth waveform into the gate via the isolating choke L1, the oscillator V2 is frequently modulated by the sawtooth waveform.

Whilst the circuit worked well up to frequencies around 1MHz, it was not much of a success at higher frequencies, and a decision was made to frequency multiply its output for the higher frequency ranges. Frequency multiplication was originally chosen in preference to a heterodyne system because of possible problems in eliminating, particularly at the highest frequencies, the second or image frequency which would have been produced. (As it turned out in the end, the image was not really a problem at all).

## The Frequency Multiplier

The frequency multiplier which was constructed is shown in figure 3. Integrated circuit N1 is a Philips LOC莫斯 hex inverter. Two of its gates, N1A and N1B, are used to square the waveform from the sweep oscillator. The square wave is differentiated by a third gate

N1C used in a linear mode to produce positive and negative going spikes from the edges of the square wave. These spikes are used to pump a tuned circuit L1 or L2 and C4A which is set at an odd harmonic frequency of the incoming frequency. For any odd harmonic frequency, both positive and negative going spikes are in the correct phase to maintain oscillation in the circuit. This is illustrated in figure 4 for the seventh harmonic. Operation at harmonic orders as high as 13 or 15 was quite successful although, at these higher levels of multiplication, some amplitude drop occurred in the period between successive spikes. To reduce this effect, the output was coupled via a second tuned circuit L3 or L4 and C4B, which are tuned to the same frequency. For tuning, capacitors C4A and C4B are mechanically ganged.

One complication in using a multiplier is that not only the centre frequency is multiplied, but also the amount of frequency deviation, by the same multiplying factor. With all this multiplication, the sweep generator becomes fairly critical to adjust and, of course, the right harmonic must be carefully selected in tuning the multiplier.

## The Heterodyne Sweep Generator

The tunable frequency sweep oscillator and the frequency multiplier were eventually discarded for the heterodyne system shown in the block diagram figure 5. Circuit detail of this is shown in figure 6 and its operation is described as follows:

The XR205 sawtooth generator N1 drives a voltage-controlled oscillator N2 operating at a fixed centre frequency of 1MHz. This is a very stable IC package type XR2209 which can operate at 1MHz with its frequency set by external R and C components. Its output at pin 8 is a triangular waveform and this is shaped to a sine wave by LP filter L1, C10, L2 and C11. The sweep frequency span is controlled by the amplitude of the sawtooth wave and this is set by potentiometer P8.

The 1MHz sweep output is mixed with an external variable signal source (such as a standard signal generator) in a double balanced mixer N3. This balances out the two input signals and delivers two frequencies which are the sum and difference of the input signal frequencies. The well-known MC1496 is used for this function and provides a high output level of mixed signals up to around 20MHz with output falling off as 25MHz is approached. Its low-frequency performance is limited to around 100kHz by the pri-

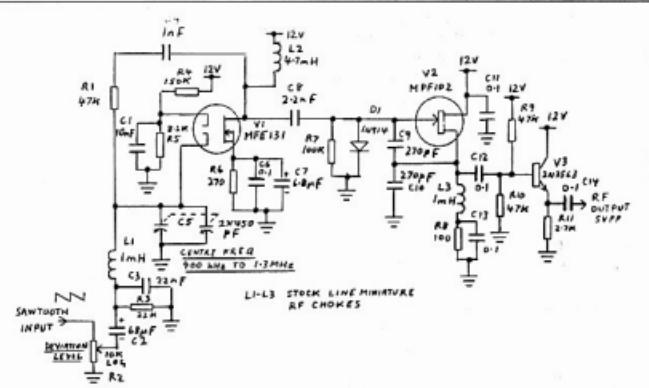


Figure 2 Frequency modulated oscillator using reactance transistor stage – tunable between 400 kHz & 1.3 MHz

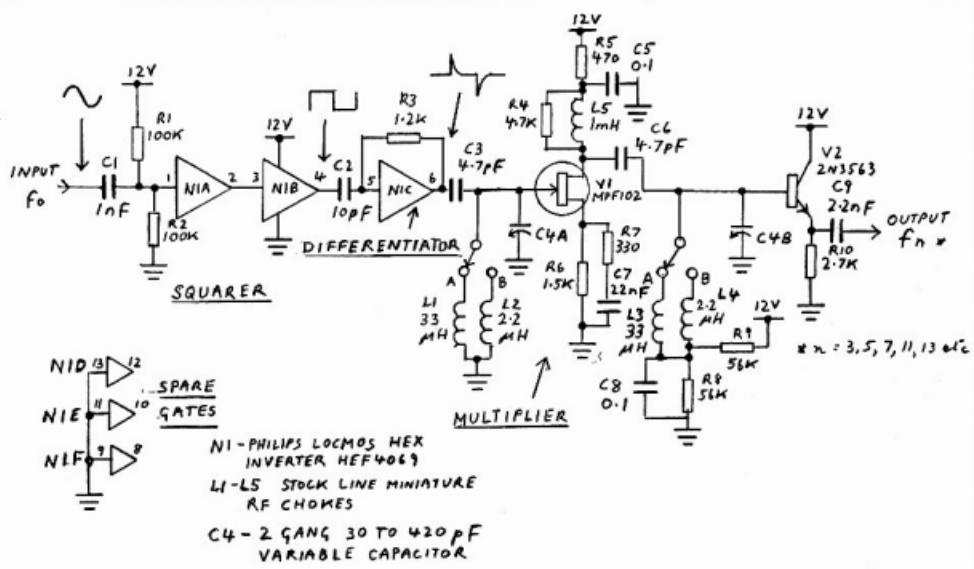


Figure 3 Frequency Multiplier

main inductance of coupling transformer T1, wound on a small ferrite toroidal core. Output level is set by potentiometer R24 coupled via emitter follower stage V1 to provide low output impedance. For satisfactory operation, the signal level from the external signal source needs to be around 0.1 to 0.5 VPP.

To set up for a given output frequency, it is only necessary to set the external signal generator to a frequency 1MHz removed from the required frequency. No tuning is required in the sweep generator itself. Of course, there is always a second image frequency component at the output, but as the filter or IF channel being tested is itself a selective band limiting device, the image component is rejected from reaching the detector circuit. (This was something which was previously overlooked when deciding to build a multiplier in preference to heterodyning).

From an operational point of view, the precise centre frequency of the fixed internal sweep oscillator is not important. However, by setting it right at 1MHz, the frequency required from the external oscillator becomes obvious without putting pencil to paper or referring to the calculator. The precise frequency of the oscillator can be set to 1MHz by trimming the value of C7. The XR2209 is a very stable oscillator provided its supply

voltage is held constant. Hence, the 12V supply to the sweep generator must be regulated.

#### Detector

A simple AM detector is all that is required to convert the amplitude varying RF signal to a varying DC level for the CRO vertical input. The time constant of the RF filter must be sufficient to remove the RF ripple, but short enough for it to follow the amplitude variations. If the IF channel of an AM receiver were

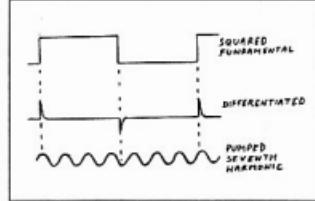


Figure 4 Differentiated pulses from square wave are correctly phased to pump odd harmonic.

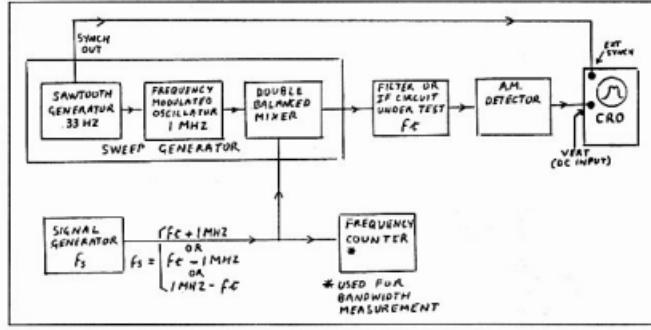


Figure 5 The heterodyne sweep generator system - sweep frequency width is independent of output frequency.

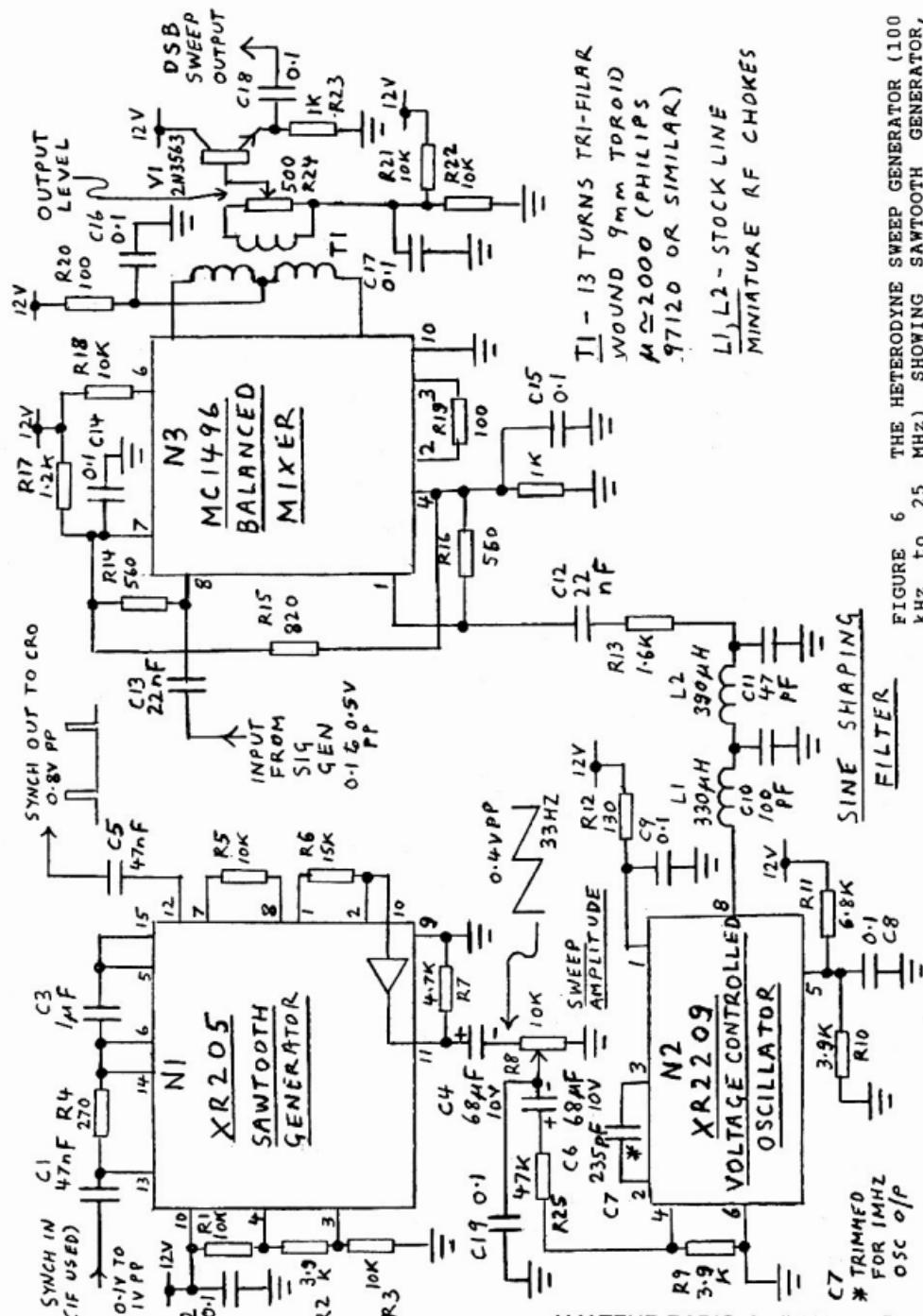


FIGURE 6 THE HETERODYNE SWEEP GENERATOR (100 kHz to 25 MHz) SHOWING SAWTOOTH GENERATOR, VOLTAGE CONTROLLED OSCILLATOR & MIXER CIRCUITS

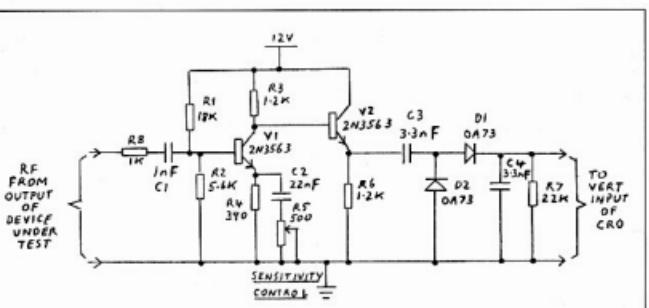


Figure 7 The detector circuit

being measured, the AM detector in the receiver would do the job nicely without any further circuitry.

Figure 7 shows the detector circuit used by the writer. Germanium diodes D1 and D2, with low forward voltage loss were used in preference to silicon diodes to reduce the zero reference error. The OA73 diodes shown were an early type used as detectors in TV receivers. The writer happened to have some of these but other germanium diodes suitable for high frequencies would also have done the job. The RF pre-amplifier V1-V2 was included to provide extra gain for measuring filters which had high insertion loss and delivered an output of inadequate level. A fairly high level into the diode detector is desirable to ensure that the zero reference error is minimal. The level must also be adequate to drive the CRO vertical deflection circuit. A gain control is provided as, on the other hand, too high a signal level input can drive the amplifier into saturation. If this happens, the plotted response curve can appear flatter at the top than it really is. If in doubt, a check can be made of the RF waveform across R6, using the CRO.

For the record, it is pointed out that the input resistance of V1 is not particularly high and if connected across high impedance circuits, it might require a further high resistance interface. Its actual input resistance depends on the setting of the gain control and is highest when the control is set for lowest gain.

## The CRO

The detected output contains only AC components within the audio frequency range and hence almost any bandwidth oscilloscope is suitable provided that it has an external trigger facility. Coupling via the DC input is preferred so that a zero reference can be defined for the plotted curve. When AC coupling is used, the position of zero reference must vary

with the amplitude and shape of the plotted curve. Hence, if only AC coupling is available on the oscilloscope, some interpretation is needed to establish the zero reference.

Another problem with AC coupling, which might be experienced in early types of oscilloscopes, is a restriction in low frequency response. With such a low sweep frequency used, this might cause distortion of the curve shape.

## The External Signal Generator

Generally speaking, any signal generator with the required frequency range can do the job provided it is reasonably stable and free of FM noise. If there is a problem of stability, it will show up particularly at the high frequencies. If the signal source wanders in frequency, the trace will, in turn, wander across the CRO screen making it difficult to evaluate its shape and scale off its bandwidth. The writer's ageing Advance E1 signal generator (with valves) proved to be reasonably stable. At high frequencies (around 11MHz) a very slight jitter showed up in the trace. This was thought to be due to the carrier being frequency modulated by 50Hz. (Very close to the 33Hz sweep frequency).

On the other hand, the writer's Belco signal generator was unsatisfactory for the purpose at high frequencies. Using this source, it was difficult to hold the trace steady on the screen and it also introduced ripple on the top of the trace.

Had a suitable signal generator not been available, an alternative could have been to build in a stable variable frequency oscillator as part of the sweep generator unit.

## Reading the Curves

In plotting the response of those filters which are made up of a number of crystal elements, some surprising bumps and kinks show up in the trace. In these

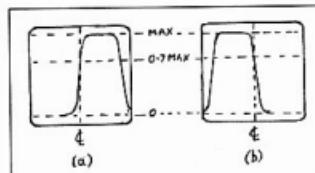


Figure 8 Measurement of Bandwidth

filters, the measured response is often quite different from the nice smooth curves shown in the glossy brochures. The perturbations as read on our equipment are even more pronounced than on the usual spectrum analyser because the vertical axis is plotted in a linear form, whereas the spectrum analyser is plotted in decibels. A typical spectrum analyser screen might plot 10dB per graticule division and hence a 3dB trough in response would be about one third of a graticule division. In the linear plot, 3dB is represented as 70 per cent of the whole trace height.

Bandwidth is defined as the range of frequencies with an amplitude within 3dB down or 0.707 of the maximum amplitude. To measure bandwidth, a simple procedure has been adopted. First adjust the trace height to say 10 graticule units. Adjust the frequency of the external signal generator so that the left-hand gradient of the curve intersects the centre graticule line at 70 per cent of the trace height or seven graticule units. (Refer figure 8a). Now accurately measure the frequency of the external signal generator with a frequency counter and record the value.

Readjust the frequency of the signal generator so that the right-hand gradient of the curve intersects the centre graticule line at 70 per cent of the trace height. (Refer figure 8b). Again measure and record the signal generator frequency using the counter. Bandwidth is calculated as the difference in frequency of the two measurements made.

Another method of measuring bandwidth is to scale off using the graticule scales. Before this method can be used, it is necessary to calibrate the sweep amplitude control (R8 in figure 6) in terms of sweep width in kHz. Once this has been done for all time, the control can be set to a reference width (say 10kHz). If the CRO graticule of 10 divisions wide, adjust the horizontal amplitude on the CRO sweep to exactly embrace 10 divisions. (Blips on the trace normally show up to mark where the sweep starts and finishes). Each graticule division is now 1kHz wide and this can be used to scale the curve width at an amplitude 70 per cent of maximum.

Calibration of the sweep amplitude control requires some patience. To measure sweep width, choose a prominent bump or kink on a typical trace and adjust this by shifting the signal generator frequency until it coincides with the start of the trace. Measure and record the frequency using the counter. Now change the frequency of the signal generator so that the reference bump or kink coincides with the finish of the trace. Again measure and record the frequency. The difference frequency between the two readings is the sweep width. Some repetition of this procedure is needed to build up data to calibrate the control.

In the writer's unit, maximum sweep width possible was 47kHz and the sweep width control was calibrated from this figure down in steps to 1kHz. In the heterodyne sweep generator, the frequency modulated oscillator has a fixed centre frequency and hence the sweep calibration holds good for whatever frequency is taken out of the mixed stage. This could not have been achieved in the type of circuit shown in figure 2. It would also be upset by multiplication as shown in figure 3.

Another measurement which can be made on the filter under test is its out-of-band rejection figure. This can be done by scaling off voltage readings on the CRO graticule. The output signal from the detector is set to a suitable level and the voltage step (V1) above zero reference, in the centre of the passband, is recorded. Maintaining the same signal level, the voltage step (V2) above zero reference, out of the passband, is also recorded. To take the second reading, it becomes necessary to step around the CRO vertical multiplier switch to resolve the lower value. In each case, the zero reference is

checked by earthing the input. (Most oscilloscopes have a switch for this purpose). The out-of-band rejection in dB is equal to  $20 \log(V1/V2)$ . The writer was able to measure out-of-band rejection figures as high as 55dB using this procedure. Measurements beyond this could be expected to be limited by the noise level of the measuring system.

### Assembly

As the heterodyne sweep generator electronics are essentially three IC packages with associated components and the detector is essentially a few transistor and diode stages, the physical size of the unit is mainly set by the three potentiometer controls and five input and output connectors. The connector points are required for synchronisation, signal generator input, sweep RF out, detector input and output to the CRO. To house the unit, the writer made use of one of the Dick Smith Electronics small aluminium boxes. As the unit was experimental, the general components were hard wired on a piece of blank circuit board. The board suffered quite a few changes over the period of development and hence its final form was not suitable to submit as an optimised layout. This is another task which someone else might take up — perhaps on printed circuit board.

### Evaluation

To check the performance of the sweep generator, it was used to plot the response of a number of filters, which had previously been evaluated using a good quality spectrum analyser. Both narrow band (3kHz) and wideband (15kHz) ceramic filters for 455kHz were checked out. The response of a 455kHz IF strip

was also plotted. At the higher frequencies, quartz crystal ladder filters set at 9MHz and 11.5MHz were used. The heterodyne system operates up to 25MHz but no filters or IF strips were on hand to plot a curve above 11.5MHz. Operation between 1.5 and 25MHz is therefore assumed but not fully proven. Of course, at 25MHz, the external signal source would have to be very stable.

### Summary

The finalised heterodyne sweep generator circuit makes use of three integrated circuit packages, one for sawtooth generation, one as a frequency modulated fixed carrier frequency oscillator and one to mix the modulated oscillator with an external variable signal source. The circuit as built can be used for response curve measurements in the frequency range of 100kHz to 25MHz. Sweep widths can be varied between zero and 47kHz. The circuit operates in conjunction with an external variable frequency signal generator and a cathode ray oscilloscope. For accurate bandwidth measurements, a frequency counter, or some other means of accurately measuring the signal generator frequency, is also needed. On the other hand, if the sweep width control is pre-calibrated, an estimate of bandwidth can be made using the CRO graticule scale.

The sweep generator unit, itself, is untuned, and the only tuning required is that of the external signal generator.

Assembly of crystal ladder filters for single sideband operation is often carried out by the home-construction radio amateur. The sweep generator unit is very useful to check out the performance of these.

ar

## The Second Gladesville/AUSSAT ATV Test

The second test in the series was conducted on Wednesday evening, 27 February with WICEN as its main theme.

By the end of the night, 124 reports had been received from a wide area of Australia. Reception reports indicated a good video signal with a slight problem on the sound apparently lacking bass. With four stages of links to the Belrose earth station, a gremlin may have got in.

The WICEN content came from material prepared by NSW and Victorian WICEN in the form of seven segments. In addition, there was the regular news segments from GARC, the WIA and ANARTS, a couple of interviews and two tapes produced by NASA and made available by Tidbinbilla. The test transmission just fitted into a three-hour VHS tape.

Two regions had the misfortune to miss the live transmission. In Adelaide, the facility earmarked disappeared at short notice for a tele-conference circuit. No VK4 reports were received, and it is understood a similar lack of facilities occurred.

The 124 reports during the evening were made up as follows: 15 non-callsign holders from throughout the country. By callsign there were four from VK1, 64 from VK2, 11 from VK3, 14 from VK6 and 15 from VK7.

Will there be another test, you may ask? Maybe. Each test entails a lot of extra work to a normal weekly test transmission. Not least of all is the establishment of the required links. The studio facilities are severely shadowed in the direction of the Belrose earth station,

and it requires several hops to get there. The first test made use of the nearby TAFE satellite input which had a difficult first hop. Unfortunately the TAFE has reconfigured its facility such that the feed to AUSSAT will originate on the other side of the city. The availability of links which could be left in place may determine future tests.

Tom King VK2ATJ wrote an article about the first transmission and this can be found in the March 1991 issue of *Electronics Australia*.

Thanks to the AUSSAT management and staff and to all who assisted with the second test transmission.

A copy of the first test may be obtained from the Federal video library. See Feb AR for details. A copy of the second test will be available shortly.

Tim VK2ZTM ar

# Getting Started with Amateur Radio Satellites (Part 3)

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**L**AST MONTH WE UPGRADED our station to the stage where we could follow a satellite around the sky with a hand-steerable antenna. Perhaps you were able to hear signals from UoSat-2, our last flavour-of-the-month satellite. Next month I'll be looking at the telemetry coming down from these birds and how computers find their place in all this.

This month, however, we'll look at a communication satellite. Our flavour of the month is RS-10/11. This is probably the easiest of all the communication birds to operate. Essentially it is two separate packages, Radio Sputnik 10 and Radio Sputnik 11. They are carried piggy-back on a large commercial Russian satellite. RS-10 and RS-11 both have transponders with uplinks in the 2m and 15m bands and downlinks in the 2m and 10m bands. The transponders operate in five different modes. RS-10 has beacons on 29.357, 145.857 and 145.903MHz. RS-11 has beacons on 29.407, 145.907 and 145.953MHz. This all sounds very complicated, but don't panic. The beacons send telemetry messages in morse code and there's only one on at a time. Most operators listen for the beacons to find out which package and which transponder is operating. I'll explain and list the transponder frequencies later. A transponder is best thought of as a wide-band repeater. It's a device that listens to a slice of one band and re-transmits it in its entirety, signals and all, on another band. In effect this means that if you transmit a signal up to the satellite, ie uplink in its listening passband, your signal will be transmitted, along with all the others in the passband on its downlink. Other stations in range of the satellites can do likewise and thereby make and maintain contact while the satellite is in range of both stations.

RS-10/11 is in an almost circular, almost polar orbit. Its orbital period is one hour, 44 minutes, 56 seconds. Its altitude is 995km, giving it a maximum access time for a high pass of 18 minutes and a maximum communication range of 6700km. This means that two stations 6700km apart could (theoretically) make very brief contact. Contacts via low orbit satellites like RS-10/11 rarely last longer

than five minutes or so. Although once again (theoretically) it would be possible to make and maintain contact through RS-10/11 for a maximum of 18 minutes. Provided, of course, that both stations are very close together. The further apart they are the shorter the possible communication time.

RS-10/11 has been an excellent performer. It has provided many newcomers and old hands alike with good results using very simple gear. Remember, a lot of the goodies we take for granted are not always easily obtained in some other countries. By concentrating on such satellites in the beginning we can gradually improve our station and bring our operating technique up to scratch before tackling the more complicated birds. Which brings us to the next upgrade requirements for our satellite station.

The first transponder flown on an Oscar was on Oscar-6. This had an uplink on two metres and a downlink on 10 metres. When it was realised that the amateur satellite program was a real goer, it became apparent that there were many combinations of up and downlink frequencies. A bit of organisation was in order. Oscar-7 had a similar transponder and a second one with an uplink on 70cm and downlink on two metres. They were designated mode A and mode B. Oscar-8 had mode B and a mode J transponder. Mode J operates uplink on two metres and downlink on 70cm. It was designated 'J' because the first one was built by Amsat-JA. RS-10/11 have transponders operating in modes A, K, T, KT and KA. As I indicated earlier they transpond between the 2m, 10m and 15m bands in various combinations.

Our simple satellite station already has listening capability on two metres. You should be able to hear the mode T and KT downlink signals. They will be on SSB or CW, not FM. FM is a no-no on all satellite transponders. So are any other continuous-mode transmissions like AM, FSK, RTTY and slow-scan TV. Although RTTY and slow scan are tolerated to a degree if the transmissions are kept to an absolute minimum time. The reason, of course, is the power availability on board the satellite and the fact that a transpon-

der is a power sharing device. Not only do continuous modes eat up lots of power, they turn down the AGC on board leaving less available for those using less power-hungry modes. It really is a matter of being considerate to others.

If you have an HF transceiver/dipole antenna combination, and a 2m transceiver/ground plane combination, you are set up for operation on all modes on RS-10/11. It's worth a try and, after your first satellite QSO, you'll be spurred on to improve your station.

Last month I discussed simple tracking methods. This side of things can get quite complicated, and we'll go one step further next month in the discussion on computers.

For now, though, I'm going to suggest an alternative to tracking. That is to use an 'all-sky' antenna system. This simply means that we try to devise a system which is equally sensitive to signals from anywhere in the sky. That's not easy, but there are several which can do a pretty good job. Remembering that the satellites we've discussed so far are all in near polar orbits, a half-wave dipole is not a bad choice. Make sure it's up in the clear and oriented east/west so that its best sensitivity is north and south. On reasonably high passes the satellite will be in the most sensitive part of the antenna's radiation pattern during most of the pass. In general the same thing will happen on transmit. As before, make sure your 2m, 10m and 15m dipoles are properly resonant and fed correctly using your best co-ax. Remember, don't blame the satellite!

The first test of your station's transponding capability is to see if you can hear your own signals coming back. There's absolutely no point in trying to do this unless you can hear the beacon clearly. So let's begin as we did with DOVE and UoSat-2, by listening.

I'm conscious of the fact that knowing when to listen is still a big problem. Right through this series I'm assuming that you've just become interested in satellites and perhaps have only a minimum of equipment. Next month, when I take a look at the role of computers, it will be easy to know when to listen. Until then

*continued on page 13*

# Mobile Radio Compatibility Problems in Motor Vehicles – Part One

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**T**HIS ARTICLE IS based on a talk given by Paul Bell VK1BX, to a meeting of the ACT division of the WIA.

The intention of this article is to give a general overview of some of the electrical problems that arise when installing radio equipment in motor vehicles. We are not going to try and convert you about the mounting of the antenna. We all know where the best place for that is! So, as most of us are reluctant to cut that hole in the roof, we put up with a variety of less than optimum systems including gutter mounts, boot mounts and the like. The purpose of this article is to cover the often disregarded side of the installation, the DC supply and compatibility with electrical equipment in the vehicle. Even more importantly from your point of view, to warn you of some of the possible causes of severe damage that could be done to your equipment by what appears to be a correct installation.

Because of the amount of information and material to be covered, the article is presented in two parts. The first part is a description of a typical problem involving

an imaginary amateur named "Fred". The second part goes on to explain other problems that may occur, including compatibility with the other electronic systems in the modern motor vehicle.

We hear many signals on the air that have a high content of weird noises in addition to the "normal" modulation. How often have you heard signals with buzzes, pops, whines, some so pronounced that it is difficult to hear the "intelligence". These usually vary with engine speed and you can hear alternator whine or ignition buzz change pitch every time a gear changes, and the problem gets worse (or better, depending on conditions) as engine revs change. From some installations, you may hear the traffic indicators, the windscreens wipers, the radiator cooling fan (if it's electric), or even the heater fan.

So, what's happening? Let's start with a story about an imaginary amateur named "Fred". (No offence to all the Freds out there!).

Fred proudly gets his hands on his new rig. He eyes off his sparkling set of wheels, the pride and joy of the XYL! NO! There's

no way he is going to punch a hole through the roof. Okay, the board of control (XYL) will grudgingly allow a small blemish in the mudguard (purely in the interest of matrimonial harmony), so in goes Fred with the hole saw. After a short bout of hacking and a few screams of tortured metal, the quarter wave stands to attention, a real work of amateur art. Now, with a little persuasion and a few screws, Fred nestles the set snugly under the dash, a real feat in some of the modern vehicles! Where is he going to connect the power leads? Obviously he wants to get the best performance from his rig, so he wants minimum power loss in the leads to his set. Hmmmm, well, the power comes from the battery, so the best place must be straight to the battery. But Fred's no fool, he decides to check with a few of his mates first, just to make sure. They all have mobile rigs so they should know what to do. "Yep," say the mates. "That's what I did and it works well." So Fred goes ahead and connects his rig to the battery, the positive lead to the positive terminal and the negative lead to the negative terminal. Fred is VERY careful to make sure that he has the connections

(continued on page 14)

## Getting started with Amateur Radio Satellites (Part 3) *continued from page 12*

you'll have to ask someone who already knows. As with all circular orbit birds, once you know the time of one pass, you can calculate the next few by adding the orbital period. That's why I've taken pains to explain what the orbital period is and to give that figure for each of our flavour-of-the-month satellites.

At the appropriate time start listening carefully for the CW beacon. It won't be super strong, but it should be clearly audible. Listen on both two and 10 metres on all the beacon frequencies. Once you hear it and note the frequency you should be able to work out which downlink passband to listen in for any signals. Tune over this band as if you were tuning over the DX part of 20 metres after a weak one from afar. Try this on a few passes to get the idea of the amount of activity to expect. You may even be able to twist another local satellite operator's arm to put up a signal for you.

By now you'll be itching to try to get a signal through the transponder yourself. Once you've identified the beacon frequency that will tell you which package is operating, RS-10 or RS-11. You'll see from the frequency table that their uplink passbands are slightly different, as are their downlink passbands. Set your transmitter to a frequency near the centre of the uplink passband, say 145.880MHz in the case where RS-10 mode A is on. Set your receiver to 29.380. Give a test call on USB. Ten to 50 watts should do the trick and listen, tuning several kHz on either side of the expected downlink frequency. What a wonderful surprise to hear your signals coming back. Being received and re-transmitted by an orbiting spacecraft. Congratulations! It isn't easy to get it all together, and the fun's only just started. If you're feeling confident, why don't you call CQ? Your first contact may be easier if you line it up with another local satellite operator.

I'll give you a table now showing all the transponder frequencies. Copy it in LARGE type and pin it up over your operating position.

RS-10...	Uplink band	Downlink band
Mode K	21.160-21.200	29.360-29.400
T	21.160-21.200	29.410-29.450
A	145.860-145.900	29.360-29.400
KT	21.160-21.200	29.360-29.400
KA	21.160-21.200 and 145.860-145.900	145.860-145.900

RS-11...

Mode K

21.210-21.250

Downlink band

29.410-29.450

T

21.210-21.250

145.910-145.950

A

145.910-145.950

29.410-29.450

KT

21.210-21.250 and  
145.910-145.950

145.910-145.950

KA

21.210-21.250 and  
145.910-145.950

29.410-29.450

It looks complex but, if you look carefully, you'll see that there's only three passbands in different combinations. KT and KA have dual uplinks or downlinks.

Go to it and good luck. Next month we'll look at telemetry, computers and elliptical orbits, starting with Oscar-10.

ar

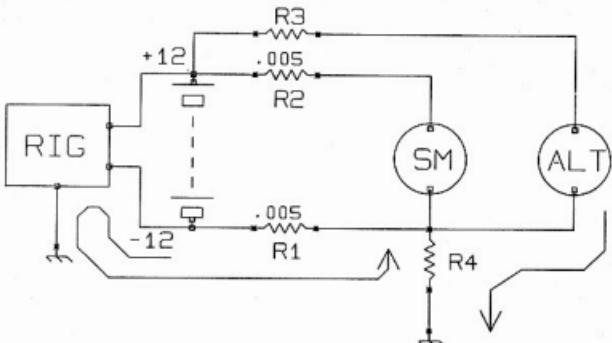


FIGURE 1.  
SHARED CURRENT PATHS

the right way round; after all, he doesn't want to write off his nice new rig straight away.

The installation is complete. As a final check, Fred goes over things once more. Yes, the power connections are correct, the antenna is properly installed and has a good connection to the body of the car, and there are no other connections where they should not be. Fred is ready for the test firing.

He switches on, selects the local repeater frequency, checks his offset, listens for traffic (Fred always does the right thing), and gives a short call for a radio check. He gets a reply from one of the helpful locals saying: "5 and 9 OM, and your audio sounds great!"

Fred's head swells; he had done it and it works first go! Fred switches off and relaxes. Now the rig is there whenever he goes mobile.

The next time that Fred goes for a drive, he switches on the rig and listens around. Before long there is a CQ. Fred goes back to the call and replies to him, but the response from the other station stuns Fred. "Sorry old man, can hardly hear you. There's a fair amount of ignition noise and a lot of alternator whine on your audio."

Fred's face falls. What has he done wrong? He checked up, followed the advice and now there're problems. He goes back to his mates to find out what he might have done wrong.

"Oh yes," say the mates, "there could be a few problems. Why don't you try...?" And they start to tell poor Fred all about co-ax capacitors, changing ignition leads, ferrite chokes, bonding body panels, pi filters, relocating wiring, grounding

exhaust pipes, and so on and so on. Poor Fred hardly knows where to start.

Well, time passes; the leaves fall from the trees, and the days get shorter and shorter as Fred tries cure after cure. He does have a few small successes, but the basic problem still seems to elude him. He is still left with noticeable ignition and alternator noise on his transmission.

"Okay," says Fred, throwing in the towel, "I'll put up with what's left." Then, one chilly morning as Fred talks to one of the regular locals, a minor miracle occurs. "What have you done, Fred, all of your engine noise has gone?"

Fred is surprised. He mumbles something about trying everything, and ends the contact. Fred is now puzzled; he can't think of anything that he's done recently that should have affected the radio.

The next weekend, Fred decides to tidy things up after pulling the wiring around looking for his problem. He goes to his car and turns on the rig to have a listen while he works. While he is moving the wiring, he removes the antenna connector to the rig to relocate the cable and notices that the set goes off.

"That's a bit odd," thinks Fred.

He reconnects the antenna and, sure enough, the set springs back to life. Fred looks into this phenomenon more closely and finds a blown fuse. He wonders what could cause the fuse in the negative lead to "blow".

Fred replaces the fuse with one of the same rating. On his next contact, the remark comes, "I see you've got your noise back again, Fred. What did you do?"

Fred is puzzled; he hasn't done anything! Fred does not know what the problem is, so he just lets things drift along

until about a week later on another chilly morning comes the comment that the noise has disappeared again. Poor Fred! He does not know what is going on. He decides to thoroughly check the installation. As he is checking, he removes the antenna lead and notices that the set goes off! This rings bells. He has seen this before! Fred checks the fuses and, sure enough, the negative fuse is "blown". He does not have an exact replacement. "Why put a fuse in both leads?" thinks Fred

Fred thinks that it's probably just "belt and braces" policy by the maker, so he thinks that he will put in a heavier fuse; it won't do any harm. Sure enough, the next report that Fred gets tells him that his noise problem is back! This situation continues until, on another chilly morning, Fred gets a report that his noise is gone. Fred goes straight to the fuse, only to find that it's intact! What is happening this time? He removes the antenna lead, and the set goes off. Well, this is strange. Even though the noise problem has gone Fred decides he is a little worried by this development and that he should have his set looked at.

Fred takes it to the local service agent who looks inside.

"Oh dear!" says the agent, "looks like you've got an expensive job here, Fred, and it's not covered by warranty."

"What's the problem?" says Fred.

The negative tracks on the board between the negative supply lead and the rest of the set have been burnt off," says the technician. "This is usually caused by an incorrect installation."

Fred is astounded. He checked how to do it the right way first with others, and thought he had it right. What went wrong?

Fred has been a victim of KIRCHHOFF'S LAW!

"And what," I hear you say over the rustle of long-forgotten textbooks, "Is Kirchhoff's Law?"

Kirchhoff's Law says very simply that the algebraic sum of the currents into any point is zero. Whenever current is shared between more than one path, Kirchhoff's Law is applicable. This means that all of the current coming from one place has to get back there, by one path or another, to complete the circuit. To see what the effect of this is on a rig installed in a vehicle, let's have a look at the simplified diagram in figure 1. The starter motor (SM) and the alternator (ALT) are mounted directly to the engine block. The battery is mounted on the body and connected to the starter by heavy cables. These are to carry the heavy current required to start the car. Most people would wire their radio direct to the battery because they think (and even some books will tell you the same) that it's the

best place. At first glance it may seem to be the best place. Why would you not connect straight across the battery? This is where there is least resistance to the feed, and would seem to be where there is the lowest noise. But this is not necessarily so.

When the rig is installed in the car, the chassis of it may be connected to the body. Alternatively, the connection to the body may be provided through the co-ax braid and this could provide a return ground path for DC. There is, as mentioned before, a nice fat cable from the battery to the engine block (or it used to be many years ago). In modern vehicle, because of costs, weight etc, this cable is made only as large as necessary to carry the normal vehicle starting current, and not bigger! The important thing to note about this cable is that it has resistance (R1), however small. Now when the engine is started, a current of 300 to 400 amps may flow in the starting circuit. If we assume that the cable from the negative side of the battery to the engine block has a resistance of 0.005 ohms, then we can see from Ohm's Law that at 300 amps a voltage of 1.5 volts will exist across the lead. This means that the negative terminal of the battery is at a potential 1.5

volts HIGHER than the engine block. If you look at figure 1, you can see that suddenly there is an opposing voltage to the supply of the radio via the car body, of 1.5 volts. Remember that the engine block is usually connected to the body by another heavy cable. This is shown by the resistance from the starter motor and alternator to earth (R4) in figure 1.

A situation now exists where the negative connection to the radio via the power lead is at a potential of 1.5 volts greater than the "earth" connection via the antenna lead. As this is a low resistance path, perhaps even as high as .05 ohms, a simple application of Ohm's Law shows that there will be a current of 30 amps flowing! What will this current do to those small tracks on the circuit board of the radio? Whether or not current will flow in the 0 volt tracks of the board depends on the construction of the radio, but there are many where this can, and does, happen.

"But this applies only while starting the car," a voice from the rear says. True, but during that time, other problems occur. Even the best battery will "sag" in voltage when starting the car, particularly on a cold morning. In fact, this is how many commercial battery testers

determine the condition of your car battery. A very good battery may only sag to 10 volts. There has been 1.5 volts lost across the wiring and this is in opposition to the voltage applied to the set, leaving a total applied voltage of 8.5 volts. But, suppose your battery sags further to say eight or even six volts? With the 1.5 volt loss across the wiring, the voltage left to supply the set during starting may be as low as 4.5 volts. What happens to those memory "keep alive" circuits that need about five volts or more? Have you lost all of the memory programming in your rig for no obvious reason?

So, now the car is started. The engine is running and the alternator is charging the battery at perhaps 40 to 50 amps. This current is also going to flow through R1 because it is the common path back to the battery. The output of an alternator is simply rectified, unfiltered DC with a high AC component, so with 50 amps flowing through R1 there will be a ripple of 0.25 volts across R1, and applied to the radio. Is it any wonder then that there will be an alternator whine on the signal?

(To be continued)

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# SOME THINGS HAVE NO COMPARISON

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# Vintage Transceiver as a 500W Linear Amplifier

KAROL NAD VK2BQQ  
GPO Box 3209  
SYDNEY 2001

## VK2BQQ Teaser

**H**ere is an interesting variation on the theme of acquiring a linear amplifier at minimum cost. One approach would be to sell your old transceiver so that you can buy a linear. VK2BQQ suggests that you actually convert your old FTDX401 or 560 into a linear amplifier.

## A Valve Transceiver as a 500W Linear Amplifier

Here is an amplifier that you may have been looking for! Forget the expensive 1kW barrier and use your disposed FTDX-401 or FTDX-560 as a linear amplifier in style on five bands and at a maximum input 450W CW and 560W PEP for SSB.

So what do you do if you own a TS-830S, TS-430S etc, and want to boost your CW or SSB power, but can't buy a new linear amplifier?

You modify one — your own disposed FTDX-401 or FTDX-560 transceiver — like I did. The requirement for an SSB amplifier is a high peak current at a low anode voltage. These characteristics are available in 6KD6 tubes originally manufactured for TV industry as deflection amplifiers.

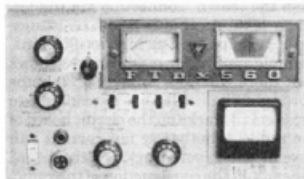
One object when starting this project was — getting the most for the least. Every attempt was made to keep the amplifier as simple and easy to modify as possible.

## Amplifier Circuit

This modified linear amplifier is composed of RF input and cathode-driven finals. Grid and screen elements are at RF ground, while normal Class AB1 grid bias and screen potentials remain the same. In Class C the operating point of the finals has to be shifted with VR11 bias adjustment. Under these conditions, the power gain of the two 6KD6 is quite high and only about 30W to 45W drive is required for full output.

## Mechanical Consideration

Decide early on whether you'll modify the amplifier for Class AB1 only or both. If your decision is Class AB1 only, omit



installing VR11 (bias) and Ig2 meter on the front panel. The other photographs show the interior of PA (see Fig 1). Remove C109, TC1 and a part of copper bracket. Keep only 25mm in length to hold R23 and R25.

On the rear of the chassis remove the ground screw and relocate it as seen in Figs 2 and 3 then drill and file a mounting hole for the RF input socket.

You should remove from the transceiver all the valves except the two 6KD6 finals, V209 12AT7 relay control and the voltage stabiliser V7 VR 105 MT. Remote relay — originally 8Ohm receiver output is used to interconnect a linear amplifier with a transceiver, see Fig 3 and Fig 4. On the main circuit diagram, Fig 6 shows the circuitry of remote relay in connected via an audio co-ax cable to PTT/STBY MOX switch.

## Relay Circuit

The original relay RL-2 is used to bypass the amplifier during receive or when the amplifier is not required. Relay RL-2d is used for that purpose. To do so you will have to disconnect the two leads from the socket of RL-2d, pins 4 and 8, and from J5 pins 9 and 10. Carry out the wiring as per drawing indicated in Figs 5 and 9.



Figure 1 PA and PC Driver board

## Input RF Circuit

The simple circuit into cathode is composed of a parallel resonant circuit. The coils are wound and assembled on the PC driver board (see photographs Figs 10 and 11). Enamel wire of 0.8 and 1.25mm has been chosen for safety purposes. You can accidentally hit the amplifier with full drive on, and there will be no fireworks or melting. The slugs are not removed but used to obtain a low SWR between the transceiver and the amplifier. Target alignment frequencies are 3.6, 7.1, 14.2, 21.2 and 29MHz. Switch S1n (originally not used) is for that purpose. Please note: you don't have to remove S1n if you can get easy access with the soldering iron down to switch S1n.

Because this is an RF project keep any PC board and co-ax shield leads short as shown in the photographs. Table 1 gives L/C value and number of turns for each band. Fig 8 shows the wiring guide between the PC board and switch S1n.

## Construction

Modification of this amplifier is simple. A close-up view of part of the completed modifications is shown as a guide in Fig 11.

Note: lay the CX1 50ohm co-ax cable below the disc capacitor and relay.

The blue feed-through capacitor between the arrows of C7 and C9 is used as a support, and one end of R25, RFC1, C9 and M1 meter leads are connected to it.

## Class C Operation

Higher power conversion efficiency can be produced by operating the finals well beyond cut-off so that the plate current

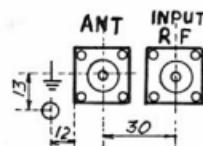


Figure 2

CX1, CX2 = 50Ω coax φ 6mm  
 CX3 = audio coax φ 4mm  
 LINK = insulated center conductor of coax

FIG. 5 *FTDX 401 or FTDX 560 Linear Amplifier.*

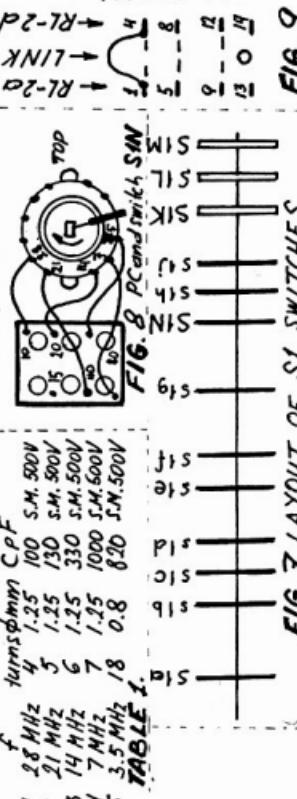
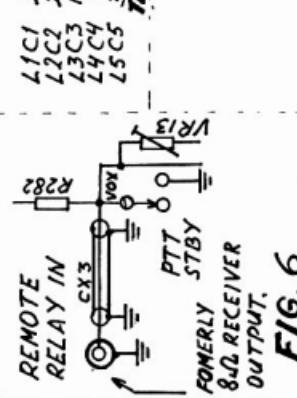


FIG. 7 LAYOUT OF S1 SWITCHES.



F/6.9

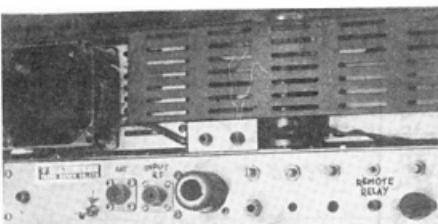


Fig.4



flows for about 130 degrees of the cycle, therefore the bias potentiometer should be turned fully anti-clockwise. To achieve this operationally I recommend relocating the bias potentiometer VR11 onto the front panel of the amplifier.

Changing the operating point from Class AB1 to Class C will change the characteristics of the loading slightly. However, the  $\pi$  network in the plate circuit is still capable of performing its output matching job. In the negative power supply replace R515 (5.6k or 10k) with a 1K ohm/0.5W resistor.

If the output circuit is slightly mistuned and the 6KD6 is fully driven above 700mA screen current will be excessive and the final tubes may be damaged.

To avoid this both screen and plate currents are continually monitored. Remove the old VFO assembly and install a 0-50 dc milliammeter for screen current metering.

### Adjustment and Tuning

The exciter is adjusted in the usual manner as per its manual. Beginning with 29MHz connect the exciter into a 50 ohm dummy load through an SWR meter. Tune the exciter up to about 150mA of cathode current. Now turn down the CW carrier gain and make no further adjustment to the exciter except to regulate drive when necessary.

Transfer the dummy load to the linear amplifier through a second SWR or RF power meter and connect the exciter to the RF input of the linear amplifier, retaining the first SWR meter in circuit.

Switch exciter to send/transmit and M1 should read 50mA of resting cathode current, provided that the remote relay output from the exciter is connected to the remote relay in of the linear amplifier.

### Final Tuneup

Tune up the exciter to plate minimum dip, loading to maximum Ig2 or RF power output meter indication, keeping cathode current below 150mA.

Tuning the linear amplifier is similar to any conventional plate/load circuit except that setting the load capacitance is much more critical in Class C. Gradually increase drive, plate dip and load for maximum RF output. However, in Class C, turn down VR11 to minimum and keep Ig2 indication at 35mA by detuning the load one stop onwards. Table 2 shows a set of operating parameters as measured.

### Summary

This amplifier has proved itself to be a good performer on all bands and withstood 28 hours of continual operation during the 1989 WPX CW Contest. Overall efficiency in Class AB1 is 64 per cent, and in Class C is 75 per cent. All it takes to prove this would be your decision to try the idea yourself!

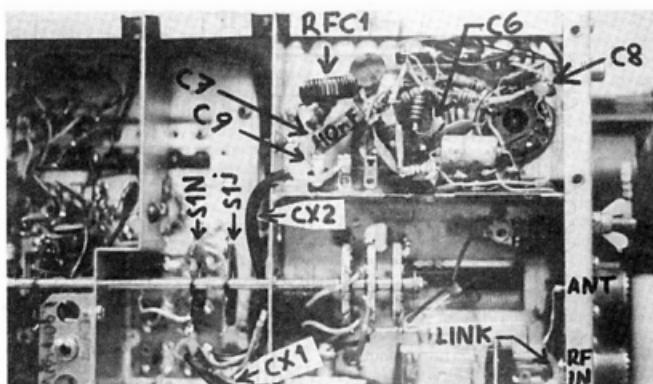


Figure 11. Under chassis view of the Linear Amplifier

Band	Wrf out		Ic mA		Ig2 mA		Va		Ic driver mA	
	AB1	C	AB1	C	AB1	C	B1	C	QB1	C
10	225	300	550	650	20	35	720	700	120	130
15	250	330	550	650	25	35	710	695	130	145
20	250	330	550	650	22	35	710	690	130	150
40	250	330	550	650	27	35	700	685	130	160
80	250	330	550	650	21	35	700	685	120	140

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Most people in electronics (and especially amateur radio) know the name of Samuel Morse, in whose honour the international telegraph code was named. But many other interesting aspects of Morse's life and achievements are much less widely known. To celebrate the 200th anniversary of Morse's birth this month, Neville Williams fills in the details.

## WHIP ANTENNA FOR 2M AND 70CM

Many hand-held VHF-UHF transceivers come with a 'rubber ducky' antenna that's compact, but not particularly efficient. Tom Moffat VK7TM has developed a simple, easy to build dual-band whip that gives much better performance. Build it and push those few modest watts a good deal further!

## NEW 2M FM TRANSCEIVER - 4

Here's the fourth and final article describing this outstanding new design for an easy to build 2m FM transceiver. It covers how to build and test the mic preamp, S-meter and ALC, and RF power amp sections — plus final testing and adjustment of the completed unit.

## THE GRAND OLD '01A

One of the most popular and successful valves ever produced was the UX201A, introduced by RCA in 1922, and its many copies and derivatives. It was used in an enormous number of receivers (both commercial and home built) in the 1920's and 1930's, as Peter Lankshear explains.

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# Musa U2MIR Goes to School

JIM LINTON VK3PC

**S**TUDENTS IN THE RURAL town of Colac in western Victoria, Australia, have scored a world first by chatting with two cosmonauts on the Russian space station MIR.

The history-making event captured the imagination of the local community, and achieved some very good publicity in the media for the hobby of amateur radio. Computer studies and information technology teacher at Trinity College, Maggie Laquinto VK3CFI, said the locals understandably were at first very sceptical about her claim she could talk with spacemen. A communication link involving three orbit passes was set up which enabled students to chat with Musa Manarov U2MIR and Victor U9MIR — but more about that later in this article.

Maggie had personally tried for two years to make radio contact with MIR on 2m FM. She achieved her ambition in a voice contact with Musa Manarov U2MIR on at 2145 UTC on 13 January 1991. "I told him I have been trying for two years to work him. The orbit pass then ended," Maggie said.

During the brief contact Maggie used some Russian language she remembered from school days. The next morning while having coffee Maggie called VK3CFI who advised she lived in a small town named Colac in a dairy-farming district. "I asked if Victor U9MIR was available, and Musa introduced him as "Flight Commander Victor" and I gave him my name in Russian." Maggie exchanged family details with both of the cosmonauts. They appeared to take a liking to her, undoubtedly aided by VK3CFI's familiarity with the Russian language.

## "I Want to Connect Now, Now!" — Musa

Some time later in the early morning her rig came to life with the deep, heavily-accented voice of Musa calling for "Margarita Ivanovna" — her maiden name. Maggie is an American-born Hungarian. She had an interest in the Russian language in the 1960s and gained a bachelor degree in the language from Boston University. Musa wanted to know what she did in Colac, and was told of her computer teaching at Trinity College. Mention was made that an antenna has been put up at the school, and as part of Information Technology classes during this students were shown packet radio.

Politely the cosmonaut expressed a desire for Maggie to teach him how to get going in packet.

On a later pass Musa said: "I have a question!" Maggie responded with "Go ahead." U2MIR said: "I want to test packet radio with you." The pair agreed to use a frequency of 147.575MHz. Musa insisted: "I want to connect NOW, NOW!" He made a connect, but the pass was then over. Maggie said it must have been "a moment of triumph" for Musa — he must have been so happy." The connect gave VK3CFI the world's first packet contact with U2MIR at 1955 UTC on 18 January 1991.

Some reports from the United States on the packet system claim US radio amateurs were the first to connect with U2MIR on 21 January — but this was several days after VK3CFI verified contact. On 18 January the U2MIR packet transmission also showed up on the "heard" log of many VK3 and VK2 stations — much to their surprise. News from Colac that U2MIR had begun packet transmissions came as a complete surprise to the mainstream amateur satellite fraternity.

Maggie said: "On packet Musa asked for instructions in getting his PMS (personal message service) going. I sent him a file and, by the next pass, 92 minutes later, he had it going." Communications returned to 145.550MHz — the standard MIR frequency — because if European stations wanted packet contact with MIR, it was not possible in some countries on 147.575MHz.

Further lessons were given to Musa to improve his packet operation. Maggie wrote in plain language for Musa packet procedures. She stresses that the exercise was the result of collective wisdom of a number of packet experts throughout VK3 and elsewhere. They eagerly gave advice, hints and tips which made it possible for U2MIR to fully get up and going on packet. Among those involved were Lou VK3DFI (Maggie's OM), Andy VK3DTO, David VK3YLV and Gary VK3JAV — who registered U2MIR on his BBS (Bulletin Board Service).

## "Want to Speak to a Cosmonaut?" — Students Asked

During a contact, Maggie suggested to Musa and Victor that they might like to

talk to school children. They readily agreed. Then the proposition was put to the Trinity College students: "Anyone who wants to speak to a Soviet cosmonaut, please contact Mrs Laquinto." Later, a concerned mother of one of the students stopped Maggie in the street. "My daughter is rather agitated — she tells me she is going to talk to a man in space," the woman said. "Have no fear; she's going to talk to two men in space," replied Maggie in a calming voice.

A group of about 50 parents, teachers and students gathered at Maggie's home on 14 February to join in the history-making event. Some 21 children spoke to the cosmonauts during three orbit passes while MIR was in radio range for about 10 minutes each time. The students either spoke via a microphone or sent their prepared questions to MIR using packet radio. It is believed to be the first radio contact of its type in the western world. Musa, who spent record 365 days in space on board MIR in 1988, and Victor, seemed pleased to chat with the students. Musa speaks a little English, and Victor only Russian — and Maggie helped the flow of conversation through her somewhat rusty knowledge of Russian.

"The students are still working through their experience — it has had quite an amazing impact," she said weeks later. Their horizons and thoughts had been broadened beyond belief, she said. "A lot of kids in a very small town now know a heck of a lot about satellites, space, cosmonauts and the human side of these space pioneers."

"It was important to focus on the children rather than her role in helping make the link possible", Maggie said modestly. The event captured the imagination of the entire Colac community. Reports on it have appeared in several major Australian newspapers, and on news and talk programs on broadcast radio stations.

## Stolen Equipment

Stolen from Dick Smith Electronics Bourke Street Melbourne store during the month of August 1990. Contact DSE or local police.  
Yaesu FT-470  
Dual Band  
Hand Held  
Serial No: 9L150788

# The History of the WIA Journal Part 3

COLIN MACKINNON VK2DYM 52 MILLS ROAD GLENHAVEN 2156

(continued from March issue)

**R**ADIO MONTHLY SEEMS to have run into trouble in September '32 as from that time less glossy paper was substituted. The November '32 issue did not appear and instead Vol 1 No 12 combined the November and December issues and signalled a new cover design, new owners, new amateur correspondents and a reduction to 56 pages. The new publisher was Briton Publications who continued to December '33 when Amateur Radio and Broadcast Monthly became the publisher. The price was then reduced to 6d, and it included more amateur information, but it lasted only until May 1934. The WIA had been unreliable in providing news for the magazine and eventually ceased to be associated with it from around July 1933.

Although it was not associated with the WIA, there is an interesting sidelight concerning the magazine *Australian Radio News*. This magazine of around 50 pages and costing 2d was published every Friday by *The Bulletin* newspaper, in Sydney. The first issue was in May 1932. It was common for magazines of the era to be the official organ of various groups and *Australian Radio News* was the journal of The Australian Radio Artists Association, The Australian Flying Corps Association and the Zero Beat Radio Club.

The main content of the magazine was radio programs for the week and news of broadcast personalities. Don Knock VK2NO, who had recently left *Radio Monthly*, became the technical editor and conducted technical and gossip columns for amateurs.

At this point it is opportune to remind you that in February 1932 the WIA NSW Division ceased to exist, having been renamed the Institute of Radio Engineers. This did not please those who were hobbyist amateurs, who promptly formed the Association of Radio Amateurs (NSW) and news of their activities was included in the journal *Radio Monthly*. In late May '33, Don Knock, who also happened to be the Vice-President of the ARA, proposed to the committee of the ARA (NSW) that his magazine, *Australian Radio News*, should become the official organ of the ARA and would provide two pages per week free for amateur news, with a guaranteed circulation of 20,000. The publishers demanded an immediate acceptance from the ARA, but instead

the committee chose to rebuff Knock and, at the next meeting of the ARA, a motion was passed to the effect that the constitution of the ARA be altered to ensure that any official journal be selected by a 2/3 majority of all members by ballot. At the same meeting Don Knock (the vice-president) and R H W Power (the secretary) resigned from the ARA!

The *Australian Radio News* ceased publication with the 15 June 1934 issue and was thereafter incorporated in *The Bulletin*.

## Stability at Last

After the partnership with *Radio Monthly* ceased, a small band of Victorian amateurs decided to continue a WIA publication and, so, in October 1933 the first copy of *Amateur Radio* was released, at a price of 6d and comprising 20 small pages of news items from the Victorian Division and its affiliated clubs, plus one technical article. The front cover proclaimed that it was "published in the interests of amateur radio by the Wireless Institute of Australia (Vic Div) official organ of the Royal Australian Air Force Wireless Reserve". The second issue contained news from the other states and with a spirit of co-operation not seen before, *Amateur Radio* (or AR) was on its way to becoming the strong amateur radio magazine it is today.

During WWII the financial and manpower resources of the WIA (Vic) were sadly depleted and so *Amateur Radio* was produced as a typed and duplicated newsletter of 10-16 pages. The February 1941 issue was missed, but then the wartime version was issued from March '41 right through to September '45. The October 1945 issue reverted to a commercially printed magazine format. See *Amateur Radio* for October 1958 for more details of the history of AR.

There are many tales of political manoeuvring, ego trips, vested interests and even some skulduggery in the history of the WIA publications prior to our current magazine, but we now have in *Amateur Radio* a magazine that compares very favourably with any other like publication and has the support and stability to go on for the next 70 years.

I have carefully checked the facts for this article, but if anyone can add further information please let me know so that

we can maintain an accurate record of our history. Write to Colin MacKinnon VK2DYM, 52 Mills Rd, Glenhaven, 2156.

## Chronology of WIA Milestones

Date	Event
1/8/1914	Last pre-WWI meeting of Wireless Institute of NSW
7/1/1919	First post-war meeting of Wireless Institute of NSW
14/3/1919	First post-war general meeting of Wireless Institute of NSW
19/3/1919	First post-war meeting of Wireless Institute of Queensland
1/4/1919	First post-war meeting of Wireless Institute of Victoria
11/9/1919	First post-war meeting of Wireless Institute of South Australia
28/10/1919	First post-war meeting of Wireless Society of New Zealand
3/11/1919	First post-war meeting of Wireless Institute of Western Australia
December 1919	<i>Sea, Land and Air</i> becomes official journal of WIA. Later changes name to <i>Radio in Australia and New Zealand</i> .
October 1923	<i>Radio in Australia and New Zealand</i> no longer the WIA journal.
December 1923	<i>Radio Experimenter</i> becomes the unofficial journal of WIA. Later changes name to <i>Radio Experimenter and Broadcaster</i> .
July 1924	<i>Radio Experimenter and Broadcaster</i> no longer the (unofficial) WIA journal.
August 1924	<i>Experimental Radio Broadcast News</i> the journal of the WIA Federal Convention, Victorian Division. Later changes name to <i>Radio Broadcast</i>
August 1925	<i>Radio Broadcast</i> becomes official journal of

*Continued on page 22*

# The ACPF

(ANTIPODEAN CONTRAPOLAR FREQUENCIES)

BY NED STOUT VK6\*\*

**S**LIM AND I HAD JUST FINISHED cleaning up the lab and were having a cup of coffee when the boss strolled in. Slim was looking rather pensive, obviously deep in thought about something. I don't remember how the conversation began, but apparently Slim had been wondering about something he had noticed while cleaning the tea-room basin. It had something to do with that old question about the direction of the swirl the water takes when it goes down the drain. Of course, most educated people know that the water swirls clockwise in the southern hemisphere, and does the opposite in the northern hemisphere (or is it the other way around?). Passengers on ocean liners have observed that the water tends to go straight down while the ship is crossing the equator.

The conversation started when the boss mentioned something he had read in a magazine which had been sent to him by a friend along with a bunch of other stuff which had been thrown out in a shack cleanup. This friend was from somewhere in the United States (in the northern hemisphere). The magazine can't be mentioned here, of course, for ethical reasons, but its initials were QST.

Apparently the premise had been made that, when considered from a mathematical point of view, an AC line voltage is not really alternating over a zero point but is, in fact, always alternating in a positive sense. That is to say that what we here in Australia consider as being 50 cycles AC is, in reality, only 50 cycles **more than nothing**. Conversely, if it were possible to generate a true AC, you

would produce energy under the zero point also, ie 50 **contrapolar** cycles. The boss stressed that this early study had been done on 60 cycles; he wondered if any difference might be noted on a 50-cycle contrapolar line voltage. It was about then that Slim made a profound observation, that there would be no difference between 50- and 60-cycle power in regard to contrapolar frequencies. In fact, none of us in the lab is good enough at maths to offer any critical analysis to either support or reject Slim's contention.

Some of you may recall the original northern hemisphere study but, for those who can't, I'll tell you that the outstanding characteristic of contrapolar frequency (we'll call it CPF) is that it does not produce heat when applied to a resistance. In fact, CPF does the opposite and generates **cold!** The boss suggested that he felt that some short-sighted soldering iron manufacturer had bought the patents on this invention, and that the drawings had probably been burned.

As all hams know, heat is the real enemy of almost all electrical devices. In fact, heat is the enemy of all mechanical devices as well. Then I got to thinking about the specifications of vacuum tubes (we say valves). I recalled that there was a specification relating to plate dissipation. The capabilities of power output valves (in a transmitter final stage, for example) are limited by the amount of power that the physical components of the valve can dissipate without being destroyed on the process.

If there was a "smarter" way of dissipating that dreaded heat, greater power

amplification could be obtained from smaller valves. Of course! We could use CPF to operate the filaments of a small valve, with positive DC on the plates!! Then, with a valve the size of, say, a 1S4, we could run a kilowatt. For those more recent converts to the hobby, a 1S4 is a valve about the size of your thumb, used in battery-operated portable radios before the war, before the advent of the transistor.

Thinking about it more, one realises that even the much-touted transistor is limited by its lack of ability to dissipate heat. To illustrate the point, look at the low output ratings of modern solid-state transceivers. Of course, CPF would not be used in portable equipment, at least until smaller CPF generators are designed. However, for base station operation, transistors with kW outputs could obviously be developed. Think of how simple it would be to put filaments into the final amplifiers! Linear amplifiers about the size of cigar boxes could be constructed. You could build transceivers with integral stubby holders... the mind boggles!

Of course, there are still some minor technical obstacles to overcome, but the boss has the connections, the initiative and, especially, the capital to overcome these problems.

Slim proposed that we set up a branch lab in Heard Island to start investigations, but the boss wants to talk to some of his powerful friends overseas about conducting research in outer space. Me? I'm mentally sending CQ CQ CQ de VK6\*\*/0. ar

## The History of the WIA Journal Part 3 (continued from page 21)

June 1927	WIA. <i>Radio Broadcast</i> fades into obscurity.	August 1928	Australia ceases production. <i>QTC</i> becomes journal of the Australian Radio Transmitters League.	December 1931	First issue of <i>TV and Radio Review</i> as official WIA journal.
July 1927	First issue of <i>QTC</i> as journal of Queensland Radio Transmitters League.	May 1929	<i>QTC</i> becomes journal of the WIA Qld Division.	February 1932	WIA NSW converted into the Institute of Radio Engineers.
November 1927	<i>Radio Journal of Australia</i> commences as journal of WIA NSW Division.	July 1929	<i>QTC</i> becomes journal of the WIA.	February 1932	<i>TV and Radio Review</i> no longer the WIA journal.
December 1927	First issue of <i>CQ</i> as journal of New South Wales Radio Transmitters League.	September 1929	<i>CQ</i> becomes journal of the WIA NSW Division.	February 1932	<i>Radio Monthly</i> becomes the WIA journal.
March 1928	<i>Radio Journal of</i>	December 1929	<i>CQ</i> ceases publication.	July 1933	<i>Radio Monthly</i> no longer the WIA journal.
		April 1931	<i>Radio Review</i> commences. Later changes name to <i>TV and Radio Review</i> .	October 1933	First issue of <i>Amateur Radio</i> .

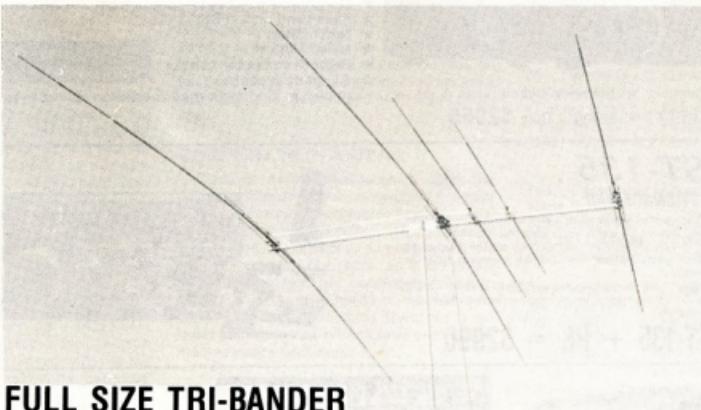
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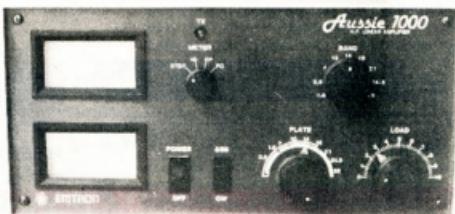


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# 1990 FEDERAL CONVENTION REPORTS

The statutory closing date for receipt of Annual Reports to be tabled at the 1991 Federal Convention of the WIA was 20th March 1991. Published below for members information are all those reports that were received by the 5th March closing date for this issue of Amateur Radio magazine.

## ANNUAL REPORT OF THE FEDERAL PRESIDENT FOR 1990

This past year has seen the results of the processes that have been put in place in the Federal sphere of the WIA. The best indicator is the successful financial result, the best for some years. This is a tribute to the management practices that have been introduced over the last few years.

## EXECUTIVE MATTERS

### FEDERAL OFFICE

Bill Roper, as General Manager and Secretary, has continued to bring his management expertise to bear on all aspects of the operation of the Federal Office. This not only includes the Office and its secretarial role to the Executive and the Council, but also the business management of Amateur Radio magazine. Bill is still providing a considerable voluntary contribution to the work of the Executive Office. This involves work on weekends and public holidays. Further, Bill has not been able to take his accrued holidays due to the work load.

We were all saddened to hear of the death of Ann McCurdy. Ann had worked in the Office for ten years and was well known and liked by many amateurs around Australia. Her smiling face and cheery voice will be missed.

Brenda Edmonds resigned from the Executive in November 1990 and has taken on the position of Assistant Manager.

### FEDERAL EXECUTIVE

This is the second year when the bulk of the Federal Executive members come from outside of Melbourne. As before, this has brought a wider view of amateur radio matters and has proved to be very useful. The members of the Executive elected in 1990 were George Brzostowski, VK1GB; Brenda Edmonds, VK3KT; Joe Gelston, VK7JG; Ron Henderson, VK1RH (Vice Chairman); David Jerome, VK4YAN; Peter Macellan, VK3BWD; Kevin Olds, VK1OK; Neil Penfold, VK6NE; Bill Rice, VK3ABP; Terry Ryeland, VK2UX and Bill Wardrop, VK5AWM. David Wardlaw, VK3ADW, was co-opted onto Executive as Immediate Past President. Brenda Edmonds resigned in November and the vacancy remained unfilled. Arthur Evans, VK3VO, was elected to the Executive in September and was appointed to the position of Treasurer.

The Executive is short of one member and it is hoped that a person can be recruited from the Melbourne area to fill this vacancy.

During the year the Executive has met on 11 occasions, with three of these meetings being two-day Saturday and Sunday meetings. These two-day meetings have allowed many items to be considered in detail, particularly items relating to the financial, budget and performance

aspects of the WIA. The Tuesday evening meeting in January had to be abandoned because of the lack of a quorum.

The weekend meetings continue to be worthwhile, as a wider group of people are now more aware of what is involved in running the WIA on a daily basis. It has also furthered a better understanding between the Divisions and provided a good opportunity for the exchange of ideas. The representation of each Division on the Executive and the weekend meetings are a successful arrangement and should be continued.

### CORPORATE PLANNING

Since its initial presentation in 1989, the Corporate Plan has been reviewed on a regular basis and changes incorporated as issues were considered by the Executive. This document should not be thought of as something which is "set in concrete", but rather as a document which can be regularly updated to take into account the changing needs of the WIA. As expected, progress on some objectives is excellent, while work on other objectives still await the necessary resources.

### AMATEUR RADIO MAGAZINE

Our magazine continues to improve, which is a tribute to the Publications Committee, the Executive Editor, Bill Rice, the Managing Editor, Graham Thornton and the Business Manager, Bill Roper. Feedback from members on the magazine, particularly the February data issue, has been very positive.

### INTERNATIONAL MATTERS

Preparation for the World Administrative Radio Conference, to be held in Barcelona, Spain in 1992, is well underway. David Wardlaw and Ron Henderson have been attending working party meetings along with representatives of DoTC and other spectrum users. In addition, close liaison is being maintained with other Amateur Radio Societies (through IARU) and views of other administrations are being noted. David Wardlaw attended a preparatory meeting (JIWP) in Geneva in March 1991.

The next IARU Region 3 Conference will be held in Indonesia in September 1991 and preparations are already under way.

### DOTC MATTERS

This year there has been little progress in negotiations with DoTC on a wide variety of matters. Accordingly, the General Manager and I visited Canberra in February to discuss the situation with the Assistant Secretary of the Radio Communication Section. The opportunity was also taken to discuss a number of matters with the Manager of the Licensing Section. Both meetings were intensive and productive, with a number of outstanding matters now having been resolved.

The Devolution of Examinations has now been completed. Examinations are now being conducted in a variety of locations and at times that suit the participants. Although there were some teething problems, the arrangements seem to be working well. However, the problem

that in some parts of this vast country, potential amateurs may find it difficult to locate and attend an examination still remains. This matter will continue to be monitored.

## VOLUNTEER CO-ORDINATORS

There are many volunteer co-ordinators who contribute to the activities of the WIA on behalf of the Executive. On behalf of all members of the WIA, I would like to thank the following people for their efforts:

Graham Ratcliff	Amsat
Phil Hardstaff	Awards Manager
Neil Penfold	Contest Manager (acting) and QSL Manager (VK9, VK0)

Brenda Edmonds	Education
Hans Ruckert	EMC
John Edmonds	Historian
Gordon Loveday	Intruder Watch
Ash Nallawalla	International Travel Host Exchange

John Martin	FTAC
Bill Roper and	
Ron Fisher	Tapes (Federal News)
John Ingham	Tapes (Video)
Leigh Baker	WICEN

Early in 1990, we were sorry to note the passing of Ken Gott, who was the Awards Manager. He had brought an interesting point of view to the position and had some great ideas up his sleeve.

I would also like to thank the members of the Executive, particularly Ron Henderson, and the Office Staff, especially Bill Roper, for their support and encouragement during what has been a very busy year for me.

**Peter Gamble, VK3YRP  
Federal President**

## ANNUAL REPORT OF IARU REGION 3 LIAISON OFFICER FOR 1990

### STRONG POINTS

As this was not a triennial conference year IARU Region 3 activities were devoted to routine liaison and the IARU work up to WARC 92. All matters arising at the last Region 3 conference in Seoul in 1988 have been concluded, except for a couple of longer term ones associated with DoTC, namely third party traffic definitions and visiting amateur callsigns. We hope for favourable completion of the first shortly; the second appears beyond the ability of DoTCs computerised callsign issue system at present.

During the year the WIA voted on IARU matters concerned with the admission of national amateur societies into the union.

The WIA communicated with the Region 3 Association concerning its management structure and received advice from the directors of the structures of the other two Regions. The WIA will follow this initiative with a firm proposal to the next Region 3 conference in Bandung next October. The WIA also advised all Regions of the activity in Australia concerned with the licensing of RF Tag Identification devices.

The financial statements of the Region 3 Association have caused some concern, for the anticipated income has not been achieved, possibly due to reduced numbers of members in

possibly due to reduced numbers of members in member societies. Furthermore, the expenditures appear to have exceeded the budget planning figures used in Seoul in 1988 to derive a budget for the triennium. The WIA responded to an Association call for financial assistance by donating \$US1000 during the year. The WIA will raise these matters, and the associated one of election of a dedicated treasurer, at Bandung.

ITU, in particular the Administrative Council, but to a lesser extent the Region 3 Association, have been busy with preparation for WARC 92. The Association has had to engender a amateur radio spirit in the administrations of the many small island states within the region. The WIA has responded to an IARU request and taken part in a special monitoring survey of selected frequencies (see WIA IW Coordinators report).

The International Representation fund, set up by Federal Council two years ago, has been of immense value in planning our international activities in these busy times. The fund must provide for all WARC 92 preparation, including JIWP attendance, bi-annual liaison visits to NZART and attendance at Region 3 conferences every three years. I strongly applaud the wisdom of the Council in creating such a fund and believe it should be a perpetual one, continuing after WARC 92. Naturally the level of members contribution will need reviewing after that major event; a full review at the 1993 Federal Convention appears appropriate.

With the next Region 3 conference six months away it is time to complete our issue papers for that meeting. We have advised topics of concern through Amateur Radio magazine and a couple appear in some detail in this report. I am always willing to accept assistance in preparation of Conference papers and look forward to members inputs.

## RECOMMENDATION

NOTING the state of the International Representation fund and NOTING the paucity of WIA members with exposure in the international forum,

I RECOMMEND a WIA funded delegation of four attend the Region 3 conference in Bandung in October 1991.

Ron Henderson, VK1RH  
WIA IARU Region 3 Liaison Officer

## ANNUAL FEDERAL FINANCIAL REPORT FOR 1990

The full financial statements of the Federal body of the WIA for 1990, audited by Harmon Partners, will be submitted to the 1991 Federal Convention. The financial statements of the individual Divisions of the WIA are quite separate from the Federal financial statements.

Complete publication of the Federal WIA financial statements would not only take up a lot of space in Amateur Radio magazine, but would also be boring to most members.

For a number of reasons over recent years the Federal body of the WIA has based its finances on a loss budget each year. This resulted in a situation where the reserves of the Federal Body were run down to an all-time low of \$175.00 as at 31st December 1989.

However, the outcome of extensive changes

and improvements in financial management, which were introduced during 1988 and 1989, was seen in the 1990 financial year which resulted in reserves being lifted to a more healthy \$55,513.00.

As a non-profit organisation, the WIA should always budget for an excess of income over expenditure of at least 5% of income. Expenditure for fixed assets (equipment, etc.) can only be made from Accumulated Profits.

The table below shows the Profit and Loss figures for the previous year, 1989; the year in question, 1990; and the budgeted figures for 1991.

If any member has any questions about the finances of the Federal Body of the WIA, please address them in the first instance to the Federal Councillor of the local Division.

Bill Roper, VK3ARZ,  
General Manager & Secretary

## DETAILED PROFIT AND LOSS STATEMENTS

	ACTUAL 1990	ACTUAL 1989	BUDGET 1991
<b>INCOME</b>			
Advertising - Amateur Radio	38456	47750	39024
Call Book	32780	32621	32000
Direct subscriptions - Amateur Radio	7335	4339	7000
Donations	341	142	250
Inserts & Divisional notes - Amateur Radio	389	646	400
Interest received	21564	17436	22500
International donations/levies	23312	2279	12332
Magazines and publications (MagPubs)	5088	10782	3800
Subscriptions	301070	243645	287500
Sundry income	3839	1529	2000
Technical Committee	3582	6485	2400
	437756	367653	409206
<b>LESS EXPENSES</b>			
AMSAT	1565	463	1500
Auditors' remuneration - audit fees	3600	1900	2600
Awards - Amateur Radio	482	315	500
Awards and special projects	459	1558	750
Bad debts written off	331	69	500
Bank charges	2070	1273	2700
Bulk posts - Amateur Radio	35695	37270	35897
Call Book (excluding Executive Office costs)	11583	13619	12000
Committee and Co-ordinator expenses	890	919	1000
Convention expenses	19599	23090	22000
Depreciation	6856	10102	6802
Drafting - Amateur Radio	855	662	1000
Electricity	924	1398	1500
General expenses	687	1784	1000
IARU dues	4897	4347	4900
Insurance & Workcare levy	3753	3135	4365
International representation provision	23645	2279	12332
Long service leave provision	-2052	764	0
Magazines & publications expenses (MagPubs)	4371	7666	2800
Postage & freight	8082	9046	10000
Printing - Amateur Radio	66436	74561	68000
Printing, stationery & office supplies	9305	5567	9000
Production expenses - Amateur Radio	0	1338	0
Promotion, advertising & recruiting	6461	9972	9600
Rent	8211	7575	9095
Repairs & maintenance	1038	3910	2000
Salaries & secretarial	124645	133455	126000
Technical Committee expenses	1760	3030	1150
Telememo - Keylink	0	2118	0
Telephone	2808	2480	3200
Travel - Amateur Radio	0	972	0
Travel - Executive	350	1290	2000
Travel - Office	706	1112	850
Typesetting - Amateur Radio	23982	24849	24500
Wrapping & addressing - Amateur Radio	8424	10219	8700
	382418	404105	388241
<b>NET PROFIT/LOSS</b>	55338	-36452	20965

## ANNUAL REPORT OF THE PUBLICATIONS COMMITTEE FOR 1990

In this report for the previous year (to December 1989) there was a reasonably detailed account of the problems encountered and negotiations necessary, to transfer production of Amateur Radio from Beltek to this Committee, and secondly to find new typesetters and printers. It was rapidly apparent that the work load was such as to necessitate a paid Managing Editor, and Graham Thornton VK3YI was appointed to the position in May 1989.

It is a pleasure to be able to report that in contrast with 1989 the year of 1990 has involved no traumatic upheavals and has enabled the Committee and the Editors to concentrate on their main task of producing each month the

*continued on page 30*

# DON'T BELIEVE US?



**"The best of the best!" ... That's what Yaesu and Dick Smith Electronics think of the FT-1000 deluxe HF all-mode transceiver. But don't believe us - read what the experts have to say...**

"...it is clearly written and complete, and includes a complete set of schematics and many high quality photos" — QST "The quality of printing and presentation of this book is the best I have seen..." — AR

#### On operation

"The layout of the front panel of the FT-1000 is just right... I reckon the FT-1000 is (operationally) far less complex than either the Icom IC-781 or the Kenwood TS-950S." — ARA "I found the FT-1000 easier to learn and use than any other radio in its class." — QST

#### On the receiver

"On receive, the performance was often beyond the limit of the latest professional measuring equipment, with no measurable trace whatsoever of synthesizer phase noise." — PW "...this rig has a very strong receiver; it has the best overall performance (in terms of sensitivity and dynamic range) and the highest third order input intercept of any commercial radio ever tested in the ARRL lab." — QST\* "The direct digital synthesizer works very well and produces receiver performance that sets new standards." — AR "I found the receiver in the FT-1000 to be astonishingly sensitive and immune to cross modulation on all bands." — ARA

#### Transmitter- SSB

"In SSB operation, the FT-1000 is easy to adjust and use... The processor adds quite a bit of punch to SSB signals; hams I worked on SSB with the FT-1000 gave me good audio quality reports." — QST "Reports were all very favourable, especially when using the speech processor." — AR "...reports of my transmitted audio were very good, even with the RF processor turned up..." — PW

#### Transmitter- CW

"CW keying was a delight...power output was checked in the CW mode and found to be well in excess of 200 watts on all bands..." — AR "On CW the FT-1000 was absolutely faultless." — ARA "CW operation with the internal keyer is a breeze... In QSK CW operation, the rig has well shaped and weighted keying." — QST

#### Transmitter- RTTY/Packet

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**DICK SMITH**  
**ELECTRONICS**

best issue of Amateur Radio that can be put together from the available material. From this follows the further duty of planning and organising the advance to ensure sufficient appropriate material will always be available.

As regards the supply of material (ie articles, photographs, columns, letters etc) there are two extreme opposite ways in which this may come about. One extreme is simply to accept whatever is submitted by anyone who is motivated to make a contribution. The other is to plan in advance, in precise detail, exactly what is to be published, and to commission selected authors to write exactly what the plan requires. In the past, we have been much closer to the first extreme than the second. However, in order to provide our readers more closely with the magazine they require, we are now attempting to introduce more advance planning; but I expect it to be a long time, if ever, before we are closer to the second extreme than the first!

Obviously, planning is pointless unless there is good information as to what the readership requires. We receive a good deal of feedback from members, and towards the end of the year four committee members put a good deal of time into soliciting opinions from members of several major clubs. Their findings were released in a report in December, which provides rather more quantitative guidance as to the "mix of material" than we have had before.

On the financial side the year proved to be highly successful. In spite of indications earlier that advertising revenue might be less than the budget figure it actually totalled nearly \$1000 more than expected. Overseas direct subscriptions were nearly twice the expectations, and overall income, a little over \$46000, was up by almost \$4000. Costs were below budget (\$222000 versus \$241000) mainly due to the reduction from 64 to 56 pages which took effect in May. The end result was that the balance provided from membership funds was \$27000 less than budget, and the net cost per copy mailed to each member was \$2.08 rather than \$2.40.

Two new members joined the Publications Committee during the year. These were Norm Eyres (VK3ZEP) and Bob Tait (VK3ERG). However, Brenda Edmonds (VK3KT) who had indicated interest in becoming Assistant Editor has left the Committee to become Assistant Manager of the Executive Office. The death of Ken Gott (VK3AJU) early in March was also a great loss, as although not a Committee member Ken helped each month with a share of the proof reading.

There is still a need for more members on the Publications Committee. Having been Editor or Executive Editor for seven years, I feel that it is time to retire, and one or two others who have given many years service would do likewise if successors could be found. The task requirements for a Committee member are such that most people in regular employment would be able to spare the necessary time. I have doubts, though, as to the Editor's ability to do justice to the position and also maintain a normal job. It requires someone who is either retired, or has at most a part-time job. Unfortunately, when as in my case, the Editor is also a member of Executive, and thus as a director precluded from receiving payment, the position becomes even less attractive. Perhaps the time is not far off

when the present paid Managing Editor and unpaid Executive Editor positions need to be merged into one full-time paid position.

In conclusion, it has been a very satisfying year for Amateur Radio magazine. The production and typesetting procedures which have evolved as Graham has settled in as Managing Editor are now working reasonably smoothly. Redfords, the typesetters, are co-operative and helpful, and the main problems which have been encountered (rather frustrating at the time) have involved software inadequacies, particularly in the tabulation of data. I would like to thank everyone involved with the magazine for their help and co-operation. This includes Redfords, all members of the Publications Committee, and all staff in the Executive Office, not to mention all our contributors and particularly the regular columnists, and also our volunteer proof-readers. Thank you all very much indeed!

**Bill Rice VK3ABP,**  
Executive Editor

## ANNUAL REPORT OF FEDERAL TECHNICAL ADVISORY COMMITTEE FOR 1990

During the past year, the Committee has undergone substantial changes in membership and has made progress in a number of areas.

**Membership:** Five Divisions appointed new TAC representatives during the year. New technical panel members have been appointed to advise on Microwaves and EME, and the Chairman has taken responsibility for VHF-UHF records. Consultation is running smoothly, thanks to the enthusiasm of panel members.

**Database:** The beacon and repeater Database has been completely revised with information received from Divisions, repeater groups and individuals.

**VHF-UHF Activity:** A number of new records have been processed, especially for the microwave bands. Certificates will be issued to all record holders. A directory of active microwave operators has been compiled.

**Repeaters:** Standard CTCSS access tones have been adopted for repeater IMD protection and access to cross linked repeaters. DoTC's continued over-regulation in the areas of linking and identification are a major frustration to repeater groups and seem contrary to DoTC's policy of deregulation.

**Packet Radio:** The number of data channels on the two metre band has been increased, and data segments have been established on the 6 metre, 70cm, 23cm and higher bands. Further information is needed from packet radio groups on future spectrum needs. DoTC's stringent identification requirements are a problem and further discussions are needed on this subject.

**Band Planning:** Minor changes have been made in the band plans to expand the EME segments on all VHF-UHF bands. The 6 metre band repeater segment has been expanded and a national co-ordination of frequency allocations has been established. The 23cm band plan has been modified to restore the second ATV channel. New band plans for the 13cm and higher bands have been developed and pre-verified.

**Beacons:** No progress has been made in transferring the 10 metre band beacons to the

new time sharing scheme, due to the lack of response from the IBP Co-ordinator. A new continuous duty beacon segment has been established at 50.250 - 50.300 MHz. Steps are needed to standardise beacon frequencies and polarisation, and to reactivate inoperative beacons.

**Frequency Allocations:** Continued discussion with DoTC is recommended with a view to obtaining a replacement for the 576 MHz band. Plans should be developed for future use of 1270 - 1280 MHz when the CAA radars are phased out. Continued uncertainty over the 2300 - 2450 MHz band needs resolution.

**Conclusion:** The past year has been successful, with a number of issues resolved and others well on the way. Most of the problems have been due to the continued failure of DoTC to fully implement its policy of deregulation.

I would like to thank the members of the FTAC technical panel, and the Divisional representatives, for their effective and helpful approach. Thanks also to Bill Roper and the staff of the Federal Executive office for their friendly assistance.

**Recommendations:** 1. That Executive regard the regulations on voice and packet repeater linking and identification as a top priority for action in 1991, and that the matter be pursued most vigorously at forthcoming WIA - DoTC joint meetings.

2. That steps be taken to upgrade the national VHF-UHF beacon network.

3. That continued efforts be made to secure the future availability of 1270-1280 MHz and the 13cm band; a suitable allocation to replace the 576 MHz band; an expanded 80 metre allocation; and the establishment of exclusive amateur segments in each of the bands between 144 MHz and 24 GHz.

**John Martin VK3ZJC,**  
Chairman, FTAC

## ANNUAL REPORT OF FEDERAL INTRUDER WATCH CO- ORDINATOR FOR 1990

The last yearly report (1989) I made a comment about it being a disturbed year, but 1990 was even more disturbed. Although we have put into place measures to help DoTC, they in turn have NIL to assist us! Their HF direction finding equipment has not materialised, a fact we should have suspected as being a ploy to keep us quiet. The DoTC seems more inclined to sit on its hands as far as international intrusions are concerned, and wait for the local intrusions to appear....these are much easier to deal with.

We now have the threat of "Spectrum buying" on our doorstep - how come we have "interested parties" being ALLOWED to purchase the air we breathe? Interesting new angle, don't you agree?

I beg to differ on the statement made by DoTC, re the ID of overseas countries, "supporting illegal ops" within our legal bands - most of the persistent intruders, eg, VRQ and its clone of stations, belong to Vietnam. This we have known ever since they became intruders, thanks to the diligence of amateur operators and SWLs. DoTC cannot claim credit for this. We make it our business to find out and so doing become the experts.

In 1985 we were advised that the USSR would remove UMS from 21032 and 14141 MHz. THEY are still there and 21283.5, no further comments have been evidently made to Moscow, as to why they have not been removed from our bands....how long do we have to wait? It is high time in my opinion, that the IARUMS Co-ord (ZL1BAD) was allowed to report direct to the ITU IFRB about transgressions into our bands by the countries named in our reports. The "softly-softly" approach in my letter of 16/10/90 referred to recruitment of observers, NOT to DoTC, with them I could be the opposite, if needs be.

Some statistics (for those who like them)

Total observers in one month 17

B/cast mode	851 intrusions
RTTY F1B	1309 intrusions
CW A1A	1041 intrusions
Other FSK and C	507 intrusions
UMS on 24 hrs USR	805 intrusions
VRO Vietnam	446 intrusions

No CB stations were listed.

**Problems** - main one is no co-ords in VK's 3 & 5; I think the Divisions there should pull their weight more in this direction, the VK2 co-ord is not a very well person I believe, he helps out obviously only when he is fit.

Our achievements have been practically nil, so this brings me to conclusions. It seems we are fighting a losing battle UNLESS we can break the DoTC barrier and get an active amateur in that department, who can look after us, with the complete backing of the government, when tackling infringing governments.

**Gordon Loveday VK4KAL,**  
Federal Intruder Watch Co-ordinator

## ANNUAL REPORT OF FEDERAL CONTEST MANAGER FOR 1990

With the new Administration of the WIA Contests and the present organisation, which overcame the loading of all Contest work onto one person, more people are now involved in Contest matters, including the Executive Office.

Present Co-ordinators are:

VK3ZJC John Martin - Ross Hull Contest  
VK1PC Phil Raynor - J.M.F.D. Contest  
VK6ANC Northern Corridor Radio Group -  
RD Contest

VK7BC Frank Beech - VK/ZL Contest  
VK2ATZ Westlakes ARC - Australian Novice Contest

It's pleasing to now have several Divisions supporting contest work.

It should be easier in future to replace a co-ordinator as the new person knows that the load is now only a quarter of what was in the past.

The role of the Executive Office must be acknowledged as it carries out the preparation and dispatch of Contest certificates. This also eases the co-ordinators burden. Their swift despatching of certificates, usually before the results are printed in Amateur Radio magazine, is very commendable.

Some criticism has been received from a member or two saying that more rules and dates of contests should be printed in Amateur Radio. This has been agreed to in general; however, the members have also been told that if overseas rules are not supplied, it's just a little difficult

to print them! Also the amount of VK activity in overseas contests is very limited.

And now into 1991, consolidating what has been achieved, and improving on the past efforts.

## RECOMMENDATIONS

A letter was published in "Over To You" in December 1990 issue of Amateur Radio magazine which asked readers if they agreed to a proposal that instead of a log being submitted for checking, a summary sheet would be acceptable instead, and this would save on postage etc. etc.

This is quite a radical move to make; however, unless tried out, one can only conjure up what the overall effect would be if put in place. Only verbal reply, no written, has been received, and this has all been favourable.

Therefore the following recommendations are made:

1. Entrants to the RD Contest to submit a summary sheet instead of a log.
2. The Contest Co-ordinator may call up any log to prove the summary sheet of an entrant. This is to be done at the Co-ordinators discretion.
3. The RD Contest Co-ordinator to use 1. & 2. as the basis for writing rules for the 1991 Contest and future contests, unless rejected by Federal Council.

## VK/ZL CONTEST

To give some value to winning a certificate, a benchmark is required. Usually this takes the form of "Top Scorer" in that section or country.

In the VK/ZL Contest it is not unusual to receive only one or two entries from a country. These may contain only four or five contacts; and the "Winner" picks up a certificate. No contest skill was needed and the cost to the WIA would not be less than \$5.00 to send out the piece of wallpaper.

Some years ago, during the time that the Contest was administered by VK6NE/VK3QV, the benchmark was set so as to give this value to winning. It is recommended that it be written into the rules again, as there is apparently no reason for it ever being dropped.

**Recommendations:** Certificates to be awarded where:

1. There are more than five entries from that country
2. If less than five entries the top scoring from that country scores 500 points or more.

**Nell Penfold, VK6NE,**  
Federal Contest Co-ordinator

## ANNUAL REPORT OF JOHN MOYLE FIELD DAY CO-ORDINATOR FOR 1990

## PROBLEMS

This contest suffered from a lot of seemingly complicated rules, not necessarily so to regular contestants. This scared away new enthusiasts. The extra bonus for "natural" power was only used by those clubs or individuals who had either a large bank balance or access through

work or educational/work resources. There did not appear to be any experimentation in this field just buy/borrow and hookup. The points system was complicated by trying to make allowances for the ZL contest. Of the few hundred stations that operated only a meagre 59 logs were submitted. Some sections could have been won by a station that did not submit a log.

## HIGH POINTS

The contest as usual was enjoyed by all who took part. Most operators were considerate and friendly. Many stations appeared to thoroughly enjoy the weekend in the bush with either family or friends. Valuable field operating experience was gained which could prove extremely useful in an emergency.

## CONCLUSION

The rules need stabilisation, achieved by leaving this years rules in force, unchanged for at least three years. At the end of three years the rules should only need tuning to correct any deficiencies. The contest is badly in need of more participants. This should be achieved with the new rules, which will remain in force for three years. "Natural" power did not achieve its aim, hence the bonus points were not allowed in the current rules. Repeat contacts were reintroduced, hopefully to increase the number of contestants.

**Phil Raynor VK1PJ**

## ANNUAL REPORT OF NOVICE CONTEST CO-ORDINATOR FOR 1990

The 1990 Contest was run with a good standard of log entry and comments received with the logs were favourable.

Participation remained average and was marked by a low number of entries from Novices! Indications were that many took part in the contest but did not submit a log. A number of club stations entered, hopefully these had novices in attendance, and so were giving experience to new novices as well as other operations.

## RECOMMENDATIONS

Novice Contest Rules

1. A listener (SWL) entry may only log 10 sequential contacts made by a station, and then must log no less than another 5 (five) stations before logging that station again. The 5 stations so logged, only need a minimum of one contact logged.

**Ken Miller VK2GKM**

## ANNUAL REPORT OF ROSS HULL VHF-UHF CONTEST CO-ORDINATOR

## ACTIVITY

Activity in the first week of the contest was quite high, especially on 6 metres, however it tapered off noticeably after New Year's Day. The introduction of separate awards for each band resulted in higher activity on 70 cm and above. Some difficulty was experienced with

contest activity on calling frequencies, especially on 6 metres.

## SCORING

Scoring based on distance was well received. Although there was far more than usual activity on 6 metres, it is clear that the other bands were at a great disadvantage in scoring. There is a strong body of opinion that 6 metres should be dropped from the contest, or that its scoring potential be reduced so that it is on a par with the other bands.

## CONTEST LENGTH

The longer contest, with scoring based on the best seven days, was not well received. Most activity was in the first ten days and there were very few "top seven" days after New Year's Day. Log-keeping was complicated by the fact that the best 7 days overall may not have been the best days on any one band. It was suggested that UTC days be dropped in favour of local time.

## SUMMARY

Most entrants felt that the new rules were a step in the right direction. However it is clear that the longer duration is not supported, and there is a need to adjust the scoring table.

## RECOMMENDATIONS

It is suggested that draft rules for 1991-92 be published for comment, with the following changes:

(1) Duration to revert to approximately 14 days, with scoring based on most or all contest days.

(2) Contest "days" to be aligned with local VK-ZL days.

(3) Scoring by distance to be retained. Band multipliers to be adjusted so that no one band or group of bands has compelling advantage.

(4) Prolonged contest activity on calling frequencies to be discouraged, possibly by nominating preferred contest working frequencies for each band.

(5) The VHF-UHF Field Day be conducted by the Ross Hull Co-ordinator and it become a regular event on the contest calendar of the WIA.

John Martin VK3ZJC,  
Ross Hull Co-ordinator

## ANNUAL REPORT OF VHF-UHF FIELD DAY CO-ORDINATOR FOR 1990

Logs are still being received at the time of writing so it is not possible to give a detailed summary of activity. Indications are that activity on higher bands has increased, although interest in the Field Day may have been affected this year by the lack of publicity and the lengthening of the Ross Hull Contest.

The current band multipliers do not reflect the difficulty of portable operation on bands above 70 cm and therefore need revision. It is suggested that multipliers become the same as those used for the Ross Hull Contest.

Field Day scoring is based on locator squares

rather than distance. This makes scoring simple and is appropriate for a contest of this kind. It could also stimulate interest in the new Grid Square Award, and vice versa.

There is some doubt as to whether the Australia Day weekend is the most suitable time for the contest, and it has been suggested that it run instead over the last weekend of the Ross Hull Contest. These options plus any others should be published in "Amateur Radio" for comment.

The Field Day has suffered from lack of formal recognition and has been run as a "trial" for three years now. This uncertainty has made it difficult to publicise the contest adequately, and is the major reason for lack of general awareness of the contest this year.

## RECOMMENDATIONS

(1) That Federal Council formally adopt the VHF-UHF Field Day as a regular part of the WIA's contest program.

(2) That scoring based on locator squares be retained, but that band multipliers be the same as those adopted for the Ross Hull Contest.

(3) That the Field Day be better publicised in future, and that the Awards Manager be asked to consider nominating it as an "activity period" for the Grid Square Award.

As this is not a contest conducted by the "Federal" co-ordinator, perhaps the best way to handle this would be to allow it to come under the auspices of the Ross Hull Co-ordinator by "recommendation".

John Martin VK3ZJC

## ANNUAL REPORT FROM FEDERAL AWARDS MANAGER FOR 1990

I have now been in the position of Federal Awards Manager for just under a year and it has been somewhat of an uphill climb. The amount of mail that is coming is increasing. I have slowly been getting things more organised but this will take time.

I took two weeks off over Christmas and spent one full week just catching up on answering letters and issuing awards. My only regret is that I get very little time these days to turn on the radio.

During this period I have put together the ground rules for the WIA Grid Square Award. I have also asked for input on two other new awards these being the Australian Cities Award and an HF version of the VHF Worked All States.

I have issued about 100 awards since taking over the job of awards manager and will probably double that this year.

Thanks go to Steve Gregory VK3OT who is now the DXCC Assistant to the Federal Awards Manager. Steve handles new DXCC's as well as updates.

I would also like to take this opportunity to thank all those who have given me encouragement throughout the year and look forward to the next year.

Phill Hardstaff VK3JFE/FK1TS,  
Federal Awards Manager

## ANNUAL REPORT FROM FEDERAL QSL MANAGER FOR 1990

Another uneventful year has passed with no highlights to report. DX type operations occurred on Lord Howe by a number of operators, for a short period in each case.

Their home addresses have mostly been tracked down. One given in the Australian Call Book was Level 34 of a major Sydney Office Tower. Can you imagine a postman trying to find VK9NX on Level 34?

World Radio News, an overseas publication, gave C/o Japanese Consulate General at a Box number GPO Sydney, which is more satisfying.

The ongoing reluctance of DoTC to supply some calls of VK0 operators continues, and some back log of cards is occurring in the bureau. Cards have been received for operators that have operated years ago, and their whereabouts now are unknown. In all, not a very satisfactory situation.

The "pirate" station which operated as "VK0E" has been identified. Due to the poor CW sending, many cards were received for VK0E. However, it was found that the station was 4NOE.

And that concludes another year. Hopefully next year will bring forth operators advising the bureau of their operations and QSL destinations.

Neil Penfold, VK6NE  
Federal QSL Bureau Manager

## ANNUAL REPORT FROM FEDERAL EDUCATION CO-ORDINATOR FOR 1990

Activities this year have been rather less than in previous years.

There have been few requests for sample examination papers or CW tapes, and I have had no invitations to speak to meetings or groups. The usual liaison with DoTC has continued - I have attended Joint Meetings as appropriate and been in communication as the occasions arose. However, there has been less need for my intercession with DoTC this year as in many matters the Divisions are now working directly with the Department, particularly in respect to the mechanics of the devolved examination system.

I have been in continual touch with the Executive and have attended all Executive meetings. I have attended several local Conventions or Field Days. I have maintained the monthly "Education Notes" column in AR.

There have been a few written and telephoned requests for information or assistance from individuals or groups, and some discussion with examiners and Divisional representatives. In mid-year I surveyed all examiners on the DoTC list as to their views and feelings on the new system, and any improvements they had made to the programs or felt were necessary.

**High Points of the year.** The main feature of the year has been, of course, the eventual examination devolution. The February 1990 examinations were the last to be completely run by DoTC. Most Divisions have now held several examinations under the new system, and the problems are being overcome. There is still a need for co-ordination of all the different needs

of individual examiners, and many of those involved believe that the time taken for accreditation of examination materials is excessive.

Theory and Regulations examination papers are being prepared to be accredited by DoTC as samples for distribution. Job specifications for the Federal Education Co-ordinator have been drawn up and approved by Federal council.

**Low Points** The main disappointment of the year has been that the devolution has resulted in reduced contact with Divisional officers and with DoTC, with correspondingly reduced information flow. The devolved examination system does not seem to be moving as smoothly as we had hoped it would. Although many enthusiasts have given a lot of time, effort and financial resources, the comments that I collect are not all favourable. However, as often happens, the complainants decline to provide specific details which I can place before DoTC.

## RECOMMENDATIONS

1. That each Division assess the examination system with a view to sharing experiences and advising each other of possible problems or solutions to problems.

2. That Divisions collect and record as much information as possible on candidate attempts and pass rates with a view to evaluating the devolved system in 1992.

3. That all information collected be pooled and analysed by the Education Coordinator in association with statistical experts.

4. That DoTC be urged to make every effort to streamline the procedures for accreditation of examination materials.

5. That DoTC be urged to participate in the proposed review of the devolved system in the light of the experiences of both the examiners and the Department over the two years.

**Brenda M. Edmonds VK3KT**,  
Federal Education Co-ordinator

## ANNUAL REPORT FROM FEDERAL HISTORIAN FOR 1990

The problem of difficulty in retrieval has been overcome in part by a re-organisation of the storage of any material which is bulky but is referred to only infrequently. I now have a small kit of material available to support talks or exhibits, and I can provide copies of reference material from 1914 onward on request without undue delay.

The most frequent request has been for copies of call sign listings from about 1923 onward, and for information about amateurs licensed before 1925. Most amateurs seem to regard "History" as being "before World War II", a symptom of the mean age of amateurs perhaps.

I have been able to return to the owners some of the material which has been on loan. This material has been a hidden problem, because even the most methodical historian could not maintain day-by-day records and list all loans as "not gifts".

The best acquisition this year was the ALARA history prepared by Mavis VK3KKS, and donated to our archives by ALARA. We can hope that the next publication could be a history of women in amateur radio from Miss Wallace (Mrs McKenna) on.

Although any material pre-1940 is welcome, the most glaring weakness in the archives is of post World War II publications, eg "VHFer", which have national significance.

All historians have the innate problem of being unable to throw out anything at all. I intend to publish a list of surplus journals in Amateur Radio magazine this year - eg. 300 kg or so of 1930s QST, which deserve a good home.

The least satisfying aspect of the historian's role for me is not having the time or facilities to complete the themes which Max VK3ZS, was annotating. However his very many notes have been kept with the relevant journals and will be available for the next generation.

In summary, the archives have been maintained and partly reorganised, a wide variety of requests has been answered, and two talks have been given, but there have been no new plans or programs completed this year.

**John W. E. Edmonds VK3AFU/ATG,**  
Federal Historian

## ANNUAL REPORT FROM AMSAT-AUSTRALIA CO-ORDINATOR FOR 1990

1990 has been yet another busy year as many more Amateurs look towards the Amateur Satellite Service with an eye to using one or more of the 10 currently active Amateur Satellites with the promise of 2 new Amateur Satellites due for launch in the first 2 months of 1991.

Six of the 10 were successfully launched aboard an European Space Agencies Ariane 4 launcher on 22nd January 1990 at 01:35:31 utc. Two satellites, UoSAT-3(OSCAR-14) and UoSAT-4(OSCAR-15), were built by the University of Surrey group and are similar to the previous UoSATs, namely scientific and educational satellites with the exception of UoSAT-OSCAR-14 which has a general-access Amateur Packet Radio store-and-forward package similar to FUJI-OSCAR-12 but using 9600 baud AFSK. Unfortunately, UOSAT-OSCAR-15 failed shortly after launch and has not been heard of since that time. The other 4 satellites are known as MICROSATS (because of their size - 9 inches). Two of the Microsats, PACSAT-OSCAR-16 (AMSAU-NA) and LUSAT-OSCAR-19 (AMSAU-Argentina), have general-access Amateur Packet Radio store-and-forward packages, another Microsat known as WEBERSAT-OSCAR-18 (Weber State College in Utah) has a video camera imaging system and the fourth, DOVE-OSCAR-17, is an educational satellite with a Digital Voice synthesiser speaking messages and satellite telemetry in a number of different languages (this part had not yet been activated at 31st December 1990) but it has been transmitting its telemetry at 1200 baud AFSK in AX.25 packets on 145.825 MHz which can be easily copied by any station capable of working terrestrial packet. This transmission alone has introduced many newcomers to the Amateur Satellite Service during 1990.

The new Japanese Amateur Satellite FUJI-OSCAR-20 was successfully launched by the Japanese Space Agency NASDA on the 7th February 1990 at 01:33 utc and is an "enhanced" replacement of FUJI-OSCAR-12 which was decommissioned in late 1989 due to insufficient power budget. This new Japanese

Amateur Satellite was put into a much more favourable orbit and therefore has been able to support much more store-and-forward packet radio bulletin board service (PRBBS) and Mode J voice transponder activity.

Other events that occurred during 1990 that have seen an upsurge of interest in the Amateur Satellite Service included the Amateur Radio operations conducted by Ron Parise WA4SIR aboard the Space Shuttle Columbia on the STS-35 mission launched on the 2nd December 1990 at 0649 utc. Many Australian Amateurs had the chance to work Ron onboard Columbia by both voice and packet radio on 145.550 MHz receive and 144.950 MHz transmit. During this mission 3 Australian Amateurs (Gordon VK6IU, Graham VK5AGR and Art VK2AS) provided the radio link to enable many school children in the United States to talk to Ron onboard the Space Shuttle Columbia.

AMSAT-OSCAR-10 (without computer control) and AMSAT-OSCAR-13, the Amateur Satellites which provide world-wide communications on 145, 435, 1269 (AO-13 only) and 2304 (AO-13 only) MHz bands continue to provide faithful service. The use of the Mode S transponder began in April 1989 which meant that many more Amateur signals are now appearing on the 2304 MHz band. There has been no further repeat of the computer software on OSCAR-13 failing during the last 12 months as experienced in 1989 due to extreme high energy particle bombardment caused by the high solar activity.

On the 7th, 8th and 9th of May 1990 I attended the first annual Phase IIID Experimenter's Meeting in Marburg, Germany (along with 23 attendees representing 9 different countries) to discuss the building of an "enhanced" replacement spacecraft for AMSAT-OSCAR-13. This was very much a "brain-storming" meeting to investigate all the various options for such a spacecraft and to give attendees the opportunity to register their interest both in providing manpower and finances for the project. On behalf of AMSAT-Australia and many interested individuals here in Australia I registered our desire to participate in such a project which were gratefully accepted. Therefore, I plan to attend the second Phase IIID Experimenter's Meeting to be held in Marburg, Germany on the 6th, 7th and 8th of May 1991 to ensure that the interests of Australian Amateurs are adequately represented at such an important meeting.

Also 1990 has seen the formation of an enthusiastic group based in Sydney, but with members from all over Australia, who plan to build AMSAT-Australia's first Microsat called VKSAT-1 planned for launch in a 1992/3 timeframe. The group plans to build a Microsat according to the AMSAT-North-America design but with an added Integrated Remote Imaging System (IRIS) experiment which will be wholly designed here in Australia. To help in dealing with governmental agencies the group has recently adopted the name of the "Australian Space Engineering Research Association".

To give the Federal Councillors some appreciation of the interest in the Amateur Satellite Service during 1990 AMSAT-Australia I received just over 1200 items (almost the same number as last year) of correspondence requesting information on hardware, literature and of course tracking and telemetry decoding software from

Amateurs and non-Amateurs (particularly school teachers).

The AMSAT-Australia monthly NEWSLETTER has increased its total number of subscribers since it started production in April of 1985 from 500 to just over 600 in 1990.

Finally, I would like to thank the WIA for its continued support of the Amateur Satellite Service via the activities of AMSAT-Australia and ask that the 1990 Federal Convention to recommend that the WIA strongly support the formation of an IARU Satellite Fund by whatever means are at its disposal and that the financial support for AMSAT-Australia be continued at the present level.

**Graham Ratcliff VK5AGR,  
AMSAT-Australia National Coordinator**

### ANNUAL REPORT FROM FEDERAL VIDEO CO-ORDINATOR FOR 1990

This has been another relatively quiet year for dubbing requests due to the same reasons as reported last year.

Not-with-standing this, the flow of requests has remained steady if slow and the new Sony VO-5040 U-matic Master Player has performed flawlessly through-out the year. Although I am happy to continue indefinitely to perform what I hope will be agreed is a valuable service, it is comforting to know that should ill-health or other reason oblige me to relinquish my office, now that the WIA owns the major equipment virtually anyone who has a VHS recorder could take over.

I am pleased to report that during the year several new titles have been added to the library What Satellites have to offer - VK5AGR

Amateur Satellites and Packet Radio - VK5AGR

AMSAT Ground Control - VK5AGR  
How to survive in a Dog-pile - VK2DEJ  
HF DX Seminar - Iris & Les Colvin  
Making Friends on DX - VK2SG  
The Gladenville ARC AUSSAT transmission of 14/11/1990

VK5 ATV Call-in July 1990

My thanks for all but the last of these to the Gladenville Amateur Radio Club and to the NSW WIA.

A complete listing was published starting on page 18-19 of the February 1991 issue of "Amateur Radio", together with instructions on how to order copies.

Once again I would urge any aspiring producers of Technical Videos to consider placing a submaster with the WIA Video Library so that the results of your work may be seen and appreciated by as wide an audience as possible. Please contact the undersigned for details and hints and tips on how best to go about recording a technical lecture.

Don't forget that the WIA Video Library exists to serve affiliated Radio Clubs, particularly those away from the big cities. If you are finding it difficult to find suitable speakers for your club meetings, check out the titles listed in the February 1991 "AR"; you'll certainly find something to interest your members there.

Finally, I should draw attention to an error in the pre-amble to the Video-tape Title listing in AR in both this and the previous year. Following

the words at the start of the third paragraph "Here's how it works..." the next sentence should commence "Except for those titles for which the WIA does NOT hold a copyright license...". My copy contained the word "except" in both years and in both years it was dropped when printed with the effect of reversing the meaning of the sentence! No-one (including me) seemed to notice though!

**John Ingham VK5KG,  
Federal Videotape Co-ordinator**

### ANNUAL REPORT FROM FEDERAL TAPE CO-ORDINATORS FOR 1990

For a number of reasons, the 15 year practice of providing Federal News on a recorded tape for weekly Divisional news broadcasts, was discontinued in April 1990.

The weekly news from the Executive Office of the WIA was then provided to each Division in script form to be read on the Divisional broadcasts by the Divisional Federal Councillor, where possible.

However, the change in system did not bring about the benefit to the WIA that were envisaged. Therefore, as a result of repeated requests, the "Federal Tape" system of disseminating news from the Executive Office was reintroduced in late September 1990.

Preparation of the news scripts for a two news segment tape averages five man-hours. All news scripts are prepared by Bill Roper VK3ARZ, with the assistance of Brenda Edmonds VK3KT. The recording of the news segments onto the master tape takes about another man-hour, a task shared between Bill Roper and Ron Fisher VK3OM. The duplication of the tapes and dispatch to each of the seven Divisions takes another two man-hours, tasks carried out by Ron Fisher, and June Fox from the Executive Office staff.

All of us involved with the production of the Federal Tapes would like to thank those volunteer Divisional broadcast announcers and engineers who so ably assisted during 1990 in broadcasting the news from the Executive Office to WIA members.

**Bill Roper VK3ARZ,  
General Manager & Secretary**

### ANNUAL REPORT FROM GENERAL MANAGER & SECRETARY FOR 1990

The Executive Office, apart from providing administrative and secretarial facilities for the Federal Council and the Executive, exists mainly as a vehicle created by the Divisions to provide those member services, such as Amateur Radio magazine, Call Book, membership database and fee processing, Customs certification, etc., which can be carried out more efficiently on behalf of the Divisions by a centralised office.

1990 was another year of consolidation and refinement of existing programs and procedures, so that the Executive Office is now running more efficiently, and more effectively providing the services required of it. Costs have been kept down wherever possible. Improved accounting and membership programs have

enabled detailed analyses of the cost effectiveness of individual projects or estimates of the possible effects of future changes.

Some of the major achievements this year include:-

Preparation of manuals for all computer operations;

Completion of a data base for DoTC communications;

Preparation of all Call Book reference material on disk;

Comprehensive analysis of membership trends;

Evaluation of recruiting schemes;

Publication of the 1991 Call Book;

Sale of the Cromenco computer;

Consolidation of the trophies to the Executive Office;

Purchase of Award plaques for Contests;

Office staffing, which went through several changes during the year, has now stabilised. The loss of Ann McCurdy through her illness and untimely death was keenly felt in the Office.

The staff currently consists of:-

**Full time paid employee**

General Manager Bill Roper 70 hours pw

Part time paid employees

Assistant Manager Brenda Edmonds 20.5 hrs pw

Book Keeper June Fox 20 hrs pw

Membership Secretary Chris Russell 18 hrs pw

Clerical Margaret Allen 18 hrs pw

Contractors

Managing Editor Graham Thornton 19.5 hrs pw

Computer maintenance Earl Russell 6 hrs pw

Volunteer workers

Librarian Ron Fisher 5 hrs pw

**Bill Roper VK3ARZ,  
General Manager & Secretary**

### ANNUAL REPORT FROM INTERNATIONAL TRAVEL HOST EXCHANGE CO-ORDINATOR FOR 1990

The International Travel Host Exchange (ITHE) is a voluntary scheme administered by the American Radio Relay League (ARRL) wherein interested radio amateurs are able to meet or host fellow operators from other countries. This is a free service, which is promoted by the WIA to its members.

During 1990 only two enquiries were handled by this office; one by an Australian amateur intending to travel overseas, and one from a Japanese visitor.

The total Australian membership is about 25. Countries with larger amateur populations have fewer ITHE participants, but that is no cause for complacency. Continued publicity at suitable intervals should improve the situation. It may be worthwhile mentioning the scheme and perhaps publishing a list of participants in the WIA Call Book.

**Ash Nallawalla ZL4LM/VK3CIT,  
Federal ITHE Co-ordinator**

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## FEATURES IN OUR MARCH ISSUE INCLUDE:

### AMATEUR TV STARS IN HISTORIC TEST

Tom King, VK2ATJ writes about the historic 'first ever' national satellite ATV broadcast late last year, which came about as a joint effort by the Gladesville Amateur Radio Club, the WIA and AUSSAT. He tells how it came about, how it was done, how the broadcast went and who sent in reception reports.

### 'SPREAD SPECTRUM' CELLULAR PHONES

A small firm in San Diego, California has developed a technology which allows many more cellular radio phones to be squeezed into the available spectrum. Based on the 'frequency hopping' and 'spread spectrum' techniques used by the military for secure communications, the new CDMA system has significant advantages over existing TDMA and FDMA systems. Stewart Fist explains...

### NEW 2M FM TRANSCEIVER - 3

In the third article describing this outstanding new design for an easy to build 2m FM transceiver, Jim Rowe, VK2ZLO explains how to build and test the audio, IF and low-power RF sections of the circuit. With these completed and tested, the receiver section becomes operational.

### REWINDING OUTPUT TRANSFORMERS

Obtaining replacement output transformers for burnt-out or otherwise faulty audio output transformers in old valve radios or amplifiers is now almost impossible. But rewinding such transformers isn't all that hard, as Peter Lankshear explains. All you need is patience and a few simple hand tools.

## PLUS ALL OUR REGULAR COLUMNS AND DEPARTMENTS:

In addition to the features mentioned above, you'll also find a host of informative reading in departments like Spectrum (communications news), Arthur Cushen's Shortwave Listening, Solid State Update (news of new semiconductor devices), Silicon Valley Newsletter, What's New in Video & Audio, Circuit & Design Ideas and so on. Not to mention Amateur Radio News, of course. And your old favourite columns, like Forum and The Serviceman...

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## AWARDS

PHILL HARDSTAFF VK3JFE - FEDERAL AWARDS MANAGER  
PO BOX 300 SOUTHCAULFIELD VIC 3162

Greetings all. To kick off this month, I would once again like to give a plug to the K1BV Awards Directory. I just received a letter from Ted K1BV advising me of the current charges for his Awards Directory. The latest edition carries details of over 1729 awards as well as a lot of application forms and different score sheets etc, etc. I have the 1989 edition and constantly refer to it. As I have said before, if you want to know what is available and from where to get it, get yourself a copy of this awards directory. Ted is also keen to hear from people who have new awards, so if your club etc has started a new award recently, I suggest you send a copy of the rules to Ted for inclusion in the next editions. Ted's details are:

Ted Melinsky  
The K1BV Directory of Awards  
525 Foster St  
South Windsor  
CT 06074-2936

The current charges are as follows:

For VK air mail      \$US25.00  
surface mail      \$US16.00

Foreign currency accepted at current rates. IRCs accepted at \$US0.50 each (ie 50 IRCs for air mail and 32 IRCs for surface mail). He will also accept money orders or bank drafts etc. The edition is 230 pages of 8-1/2" x 11" three-hole-punched to make it easy to add and delete pages.

### IRCs again

Last month I gave a bit of a rundown on the new redemption rates for IRCs. Well, it seems that not everyone in Australia Post has heard of this. It would also seem that different Post Offices have been giving differing amounts for IRCs for years, according to the information I have come across. Well, I wish they would get their act together and be a bit more uniform on this one. My wife took some IRCs to a Melbourne Post Office and was told rather bluntly that they were worth \$0.85c only. This is rubbish; they are now worth (to redeem, not to buy) \$1.20, so don't take a cent less. I sometimes wonder why Australia Post bothers selling these things if it can't be civil to people when it comes to redeeming them.

I once went to a Post Office near where I work at 2pm only to be told "can't you come here with these things when it's not lunch time?" As you can imagine, I was not impressed. I had specifically waited until 2pm for this very reason, only to be told it was still lunch time! Well, I am sure there are many of you out there who have similar stories. If so, drop me a line and I will put something together to submit to Australia Post.

### The Kenya Award

I have had a letter from the Radio Society of Kenya hanging around for quite a while, but have not had an opportunity up until now to include the details of it in the column. They only supplied a photocopy sample of the award, which looks fairly basic, but I would still like to get one if I could. The requirements are as follows:

- a total of 10 (ten) points is required
- a contact with a 5Z4 station which must be a member of RSK counts as two points.
- Only one contact per station is allowed
- a contact with RSK's club station 5Z4RS counts as four points
- modes — all modes applicable
- bands — all bands applicable

Submissions to be made as follows:

- Only contacts made after 31 December 1977 count
- submit certified list
- send 15 IRCs or \$US8.00 banker's draft made payable to the Radio Society of Kenya by registered mail
- CASH MUST NOT BE SENT**
- address applications to: The Kenya Award

Radio Society of Kenya  
PO Box 45681  
Nairobi, Kenya

### British Postcodes Award

A couple of months back I gave details of the British Postcodes Award. I wrote back to them and asked if they would send a sample copy of the award, which they did. So, here is a reproduction of it.

### Jubilee Helvetia Award 1991

#### 700th Anniversary of the Swiss Confederation

1. In commemoration of the 700th anniversary of the Swiss Confederation the Union of Swiss Short Wave Amateurs (USKA) issues the Jubilee Helvetia Award. Contacts made between 1 January and 31 December 1991, with stations using the special prefix HE7, are valid for this award.
2. The applicant must submit written proof of having contacted all 26 Swiss cantons. The cantons, preceded by their abbreviations, are as follows:

AG	Aargau
AI	Appenzell Inner Rhoden
AR	Appenzell Outer Rhoden
BE	Berne
BL	Basle — Country
BS	Basle — City
FR	Fribourg
GE	Geneva
GL	Glaris
GR	Grisons
JU	Jura
LU	Lucerne
NE	Neuhatel
NW	Nidwalden
OW	Obwalden
SG	St Gall
SH	Schaffhausen
SO	Solothurn
SZ	Schwyz
TG	Thurgau
TI	Ticino
UR	Uri
VD	Vaud
VS	Valais
ZG	Zug
ZH	Zurich

3. The award is issued in the following categories:



3.1 Contacts on any bands below 30MHz  
 3.2 Contacts on any bands above 144MHz  
 In each category, separate awards are issued for the following modes:  
 • Telegraphy/telephony (also mixed)  
 • Telemetry  
 • Radioteletype (RTTY)  
 • Slow-scan television (SSTV)  
 Cross-mode and cross-band contacts are not valid.  
 4. All contacts must be made from the same DXCC country. The use of terrestrial repeaters is not permitted.  
 5. The submitted confirmations must clearly indicate the location (canton) of the station at the time of the contact. Confirmations of portable and mobile stations lacking information on the temporary location are not accepted.  
 6. Shortwave listeners may also obtain the award. The rules are applied analogously.  
 7. Confirmations must be accompanied by a list, showing for each contact the following data: own location, callsign and location (canton) of the station worked, date and time (UTC), band, mode.  
 8. Applications containing sufficient funds for return postage must be sent before 1

January 1994 to the award managers:

Bands below 30MHz:

Kurt Bindschedler (HB9MX),  
 Strahleggweg 28,  
 840 Winterthur, Switzerland

Bands above 144MHz:

Niklaus Zinssig (HB9DDZ),  
 PO Box 651,  
 4147 Aesch BL, Switzerland

One point for working/hearing any other licensed radio amateur in the County of Nottinghamshire

All permitted bands and modes may be worked.

Each station may be entered into the log only once per claim irrespective of band or mode.

There is no time limit for starting or finishing the award.

A list of the current members and their callsigns of the Mansfield Amateur Radio Society may be obtained by sending a SAE to the Awards Manager (see address below).

A copy of your log entries of QSOs with stations in the County of Nottinghamshire should be certified by two other licensed amateurs and sent to the Awards Manager of Mansfield ARS along with a fee of two pounds, \$4 or seven IRCs.

All claims and queries should be sent to:

G W Lowe GONRA  
 Mansfield ARS Awards Manager  
 25 Manor House Court  
 Kirkby in Ashfield  
 Nottinghamshire  
 NG7 8LH England

ar

## CONTESTS

(INFORMATION PROVIDED BY THE  
 RELEVANT CO-ORDINATORS)

### VHF-UHF Field Day 1991 — Results

This Field Day was not very well supported, possibly due to the lengthening of the Ross Hull Contest, and the fact that it was not well publicised. However, this contest is a worthwhile activity that should continue. Next year it could also receive a boost from the new Grid Square Award.

### Results

In this table, the first figure is the QSO points, including the band multiplier, and the second figure is the number of squares worked.

Congratulations, therefore, to the following winners, who will receive certificates shortly:

Section A — all bands VK3ALZ  
 Section A — 6m band Nil  
 2m band VK3ALZ

70cm band VK4AIZ  
 23cm band VK4KZR

Section B — Multi operator VK3ATL

Section C — Home stations Nil

### Some Comments

"Level of activity and awareness of the event indicates that much more publicity is required... stations in Melbourne are advantaged by the well-known squares boundary line passing through the city."

"...many people have holiday commitments... the easy way out is to have the Field Day coincide with the last weekend of the Ross Hull Contest."

### New Year

As for dates, should we stick to the same weekend (especially if the Ross Hull Contest is shortened)? Alternatives could be the last

weekend of the Ross Hull Contest, Easter or the first weekend in December (which is when the ZL Field Day is held).

It is felt that scoring based on locator squares is appropriate for this kind of contest, especially as Field Day contacts could be counted towards the new Grid Square Award. However, it is proposed to change the band multipliers so that they will be the same as those used in the Ross Hull Contest. Comments on these ideas, or any other suggestions, would be greatly appreciated.

### Ross Hull Memorial VHF-UHF Contest 1990-1991 — Results

It will come as no surprise that six metres was the "band of the year" in the 1990-91 contest. Activity was higher than usual and there were a number of openings to ZL, JA and the Pacific, as well as within Australia. There was very little DX on the higher bands, with few contacts from eastern states into VK5 and none at all to VK6. There was little interest in the satellite section, with only one log received.

Contest activity varied from state to state, with most activity in the week from Christmas to New Year's Day. As usual there were far more active stations than the number of logs suggests. Logs were of a high standard. Some entrants nominated different days for different bands, and these logs were re-scored on the best seven overall days. I regret that the rules as published were not clear enough on this point.

Several logs were of particular interest:

• Peter Parker VK6BWI used a newly

Section		6m	2m	70cm	23cm	Total
A	VK3ALZ	I Berwick	—	138 x 11	—	1518
A	VK3ATL	D Clarke	—	108 x 10	—	1080
A	VK4AIZ/Z	D Friend	—	38 x 2	36 x 1	124
A	VK4KZR	R Preston	—	8 x 2	12 x 2	64
A	VK3TFE	H Szapiro	Check log			
B	VK3ATL	Geelong ARC (1)	90 x 20	178 x 10	204 x 14	6436
B	VKS2UC	(2)	19 x 7	58 x 9	44 x 5	875
B	VK7ZHA	(3)	5 x 4	28 x 6	12 x 2	212

C No logs received

(1) G Giacopuzzi VK3BRZ, G Nees VK3HQ, B Ailey VK3YK, C Leone VK3BCL, K Aspin VK3DQW  
 (2) A Russell VK5ZUC, J Brayley VK5AJQ, A Rafferty VK5BW, A Denton  
 A Hay VK7ZHA, A Perkins VK7ZAP

completed QRP CW transmitter on six metres.

- John Edwards VK3YTV used eight bands, including 2.3, 3.4, 10 and 24GHz. His 24GHz operation appears to be a national "first". He wins the microwave section by default, but no doubt would like some competition next time!
- Gordon McDonald VK2ZAB, whose log includes several ZL contacts on two metres, and daily contacts to four call areas on two metres and 70cm.

work and I believe you are on the right track with the rules."

"Activity in VK6 was very low. Many did not know it was on."

"Some stations have sat on this frequency (50.110) during openings . . . rare DX was about and missed because of contest stations."

"It is an enjoyable contest — people don't go overboard and are quite happy to have a chat."

longer period, but to avoid the need to "live in the shack" for the whole length of the contest. However, most contest activity was between Christmas Eve and New Year's Day.

This may have been due to conditions, but a number of entrants felt the main reason was flagging interest. Many stations seem to have worked hard at the start to get seven good days in the log, then tapered off after that. It seems that most still prefer a shorter period of more intense activity.

## Division into UTC Days

Comments were made that local time would be better than UTC days. Next year each "day" could begin at say 1800 UTC rather than 0000 UTC. This would also allow a full day's activity on the first and last days of the contest.

## Conclusions

It is understood that no-one likes too many changes too often, but it is clear that several changes are needed. I can plead inexperience this year, but next year will be a different matter! A set of draft rules will be published in a few months' time, but in the meantime, I would appreciate any comments on the possible changes described above.

## RD Results: Corrections

VK5ZNJ	NOT	VK5ZNZ
VK6ANC	NOT	VK6ANZ
VK6AMB	NOT	VK6AMB
VK5UM	in CW section, not phone.	
VK6RF	log received for CW section	ar

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## Some Participants' Comments

"Thank heavens for the distance component of scoring! Chasing locator squares may work in Europe, but definitely not in Australia."

"Some openings have occurred which straddle the 2300-0100 timing; this allows some stations to get double points for the same opening on the same local day."

"I would like to see the rules unchanged. Previously I have not entered because of the need for seven consecutive days to be used, plus other factors which discouraged all but the most fanatical."

"The contest is simply too bloody long!"

"I enjoyed what little of the contest I did

work and I believe you are on the right track with the rules."

"Activity in VK6 was very low. Many did not know it was on."

"Some stations have sat on this frequency (50.110) during openings . . . rare DX was about and missed because of contest stations."

"It is an enjoyable contest — people don't go overboard and are quite happy to have a chat."

## Results

		6m	2m	70cm	23cm	13cm	Mwaves	Total
VK3XRS	R Steedman	4296	948	700	252	—	—	6196
VK2ZAB	R Lear	4227	—	—	—	—	—	4227
VK4B/RG	R Graham	2895	33	—	—	2	—	928
VK2BSD	C Palmer	2577	228	—	—	—	—	2805
VK2FLR	M Farrell	2409	177	45	—	—	—	2631
VK2ZMK	M McDonald	1896	183	285	49	—	—	2414
VK2ZL	G McDonald	1200	820	—	—	—	—	2020
VK3YTV	J Edwards	110	512	525	252	120	225	1744
VK3CY	D Clarke	—	882	690	—	—	—	1572
VK5AKK	P Helbig	38	585	550	329	—	—	1502
VK3ZJC	J Martin	126	420	445	350	—	—	1341
VK27HA	A Hay	270	1059	—	—	—	—	1329
VK3AFW	R Cook	—	642	580	—	—	—	1222
VK72AP	A Perkins	7	566	510	28	—	—	1211
VK3N	R Salmon	—	795	—	—	—	—	795
VK3ZL	R Presting	82	378	235	21	—	—	716
VK5MC	T Niven	106	261	125	28	—	—	520
VK4XA	S Colston	512	—	—	—	—	—	512
VK4KZB	R Preston	—	183	290	—	—	—	473
VK3ANP	D Waring	327	—	—	—	—	—	32
VK3ATK	H Meallin	—	231	—	—	—	—	231
VK6BW	P Parker	3	21	—	—	—	—	24
VK2FLR	M Farrell Section C, Mod B	—	—	—	—	—	20	—

The winners of each section are therefore:

Section A — Multiband VK3XRS R Steedman  
Section B — 6 metres VK3XRS R Steedman  
Section B — 2 metres VK2ZAB G McDonald  
Section B — 70cm VK2ZAB G McDonald  
Section B — 23cm VK3ZJC J Martin  
Section B — 13cm VK3YTV J Edwards  
Section B — Microwaves

VK3YTV J Edwards

Section C — Satellites VK2FLR M Farrell

The overall winner — for the second consecutive year — is Roger Steedman VK3XRS. His name will be inscribed on the Ross Hull trophy and he will also receive a wall plaque in recognition of his achievement. The other winners will receive certificates. Congratulations to all.

## Problems and Possible Changes Scoring

Distance-based scoring was approved and will be retained. However, most agreed that six-metre scores were far too high. Possible solutions include making six metres a separate section, or limiting the maximum score per contact. Several entrants also pointed out that the multipliers for 23cm and above were low considering the effort involved in getting on these bands, and the number of stations available to work.

The aim for next year will be to fix this imbalance so that no band — be it six metres or any other — has a commanding advantage.

## Use of Calling Frequencies

Some stations objected to contest activity on 50MHz, especially on 50.110MHz. Most activity on the higher bands was also on calling frequencies. This often resulted in long periods of waiting for the chance to break in, and prevented some interstate contacts from being made.

One of the aims of the contest is to stimulate DX activity, but the purpose is defeated if DX calling frequencies are used as local nets! A possibility for next year would be to nominate preferred "contest working" frequencies, in the hope of moving much local operation away from the weak signal frequencies.

## Length of Contest

The aims of the longer contest and seven-day scoring were to stimulate activity over a

# HOW'S DX

STEPHEN PALL VK2PS  
PO Box 93 DURAL NSW 2158

I met Roger Harrison VK2ZTB the other day, who is better known as the propagation forecaster on HF bands. His predictions are published regularly in *AR*.

Roger says that the solar cycle in 1947 was very similar to the behaviour of our present cycle. Solar cycle 22 started in September 1986 and had a rapid rise up to July 1989, when it peaked. Since that time the cycle fluctuated between 10 per cent of the upper and lower limits of that peak. Similar cyclic behaviour happened in 1947, except that the cycle peaked again later at a higher level, and had a long and gradual decay after the second peak. Roger expressed his hope that cyclical history will repeat itself and we will have a double peak during this present period. Let's hope he's right.

## Christmas Island — VK9

Seven Japanese operators, having obtained VK6 licences, will operate as portables from Christmas Island in April for one week. The callsigns are (in brackets the home calls): VK6BFV/VK9X (JA0GPT), VK6BFX/VK9X (JH0CFK), VK6BFW/VK9X (JHOPCO), VK6BFZ/VK9X (JHOMHE), VK6BFY/VK9X (JE0VAX), VK6BFU/VK9X (JR0CGJ) and VK9AG (JR0BQT). QSLs to be sent to JA0GPT.

## The Colvins — Burundi — 9U

During the past six months or so, Lloyd W6KG and Iris W6QL were travelling on their YASME expedition in the middle and southern part of Africa. We heard them operating from Walvis Bay ZS9, Malawi 7Q, Tanzania 5H3 and Mozambique C9. From 31 January they were operating from Burundi as 9U2QL and appeared regularly on various DX nets. QSL to YASME: Box 2025, Castro Valley, CA 94546, USA.

## Ethiopia — ET

Ethiopia appeared on the bands at the end of February after eight years of silence. The operator is Jack, and he was heard on 14, 21 and 28MHz bands. His signals were not strong in the beginning, but improved after he was able to erect his beam. A few VKs worked him on the "222" net. Jack said he has waited for three years for the issue of his licence and, according to ARRL sources, his activity "looks good" for a DXCC approval. He is expected to be in Ethiopia until the end of April. It is interesting to note that one day he was not able to come up on the band because his neighbour was "suffering" from TVI. Amateurs apparently have this problem even in Ethiopia. QSL to WB2WOW Peter D Uberto, 625 Ratzer Road, Wayne, NJ 07470 USA.

## Claron Island — XF0

This island is in the Revilla Gigedo group of islands off the west coast of Mexico in the Pacific Ocean. The station XF0C appeared on the band on 22 February. The delay was caused by an accident, a broken leg of one of the members of the expedition, who had to be transported back to the mainland for medical attention. The expedition expected to stay 12 days on the island, and it is rumoured that it will seek a "new" DXCC country status. QSL to be sent to XE1BEC Hector Espinoza Flores, PO Box 231, Colima 28000 Mexico.

## Solomon Islands — H44

Since May 1990, the Solomon Islands are heard regularly on the bands. The resident operator is Al H44AP. An interesting picture emerges from one of his recent letters about himself and the conditions under which he lives. He is not only an interesting prefix to work, but also a very dedicated professional person as a lay teacher. His wife Barbara is also a teacher, and both work at St Joseph's Catholic Secondary School, 21 kilometres distance from the capital of the Solomons, Honiara. The school is located near "Red Beach" and "Bloody Ridge" of World War II fame, and is situated actually on the site of the former US military hospital. Let me quote to you from Al's letter, which makes interesting reading:

We still recycle the plywood and steel left by the Americans, and it is used in various buildings throughout the school. We are most concerned about our proximity to "Hell's Point", about 500m away from the school grounds. It was an ammunition storage dump and still contains over 30,000 unexploded shells. From time to time the Australian Army and the Solomon Island Defence Force send teams to extract and dispose of the shells without one or two random explosions.

St Joseph's is a National Secondary School, one of the few such schools in the Solomons. The students are highly qualified and represent less than one per cent of the potential secondary students in the Solomons. There are 300-plus boys and girls enrolled from form I through to form VI.

A number of boys are interested in my amateur activities, and they visit the school from time to time to talk to people on this planet. They don't quite believe that their voices are travelling throughout the world until they hear their name mentioned by the ham on the other end.

I have plans to set up a school club station when we leave, and donate my station equipment to the school. My

present station consists of an ICOM745, a Butternut vertical and a G5RV dipole.

Finally, we are located in a very lovely setting on Guadalcanal and would welcome visitors. We are not that far from Honiara and certainly not that far from Australia.

Here ends Al's letter. QSL to: Al Pearce, Box 11 PO, Honiara, Solomon Islands.

## Interesting QSOs and QSL Information

Note: callsign, name, frequency, mode, UTC, month of QSO. ADAR=QSL info in previous issues of *AR*.

\* 7Q7EC-14024-CW-2000-Jan-QSL to DF3EC: Achim Rogmann, Frankenstr 34 D-4190 Kleve, Germany.

\* Z21GC-14012-CW-2040-Jan-QSL to Brian Legg, Box 294, Harare, Zimbabwe.

\* C56/G3VPW-14004-0800-CW-QSL to: J Wright, Reservoir Cottage, Redhill, Nottingham, Notts, NG5 8PE, United Kingdom.

\* ZW6XWD-Doug-14023-CW-0900-Jan-QSL via Bureau.

\* 3A2LF-P-Claude-14033-CW-1920-Jan-QSL via Bureau.

\* 5Z4FM-Jim-14019-CS-1939-Jan.QSL to: Box 44007, Nairobi, Kenya.

\* ZD8BOB-Bob-21245-SSB-2139-Dec.QSL to: Box 2, Ascension Island.

\* V51CK-Jack-21219-SSB-0537-Dec.QSL to: Box 1232, Swakopmund, Namibia, 9000.

\* FH5EJ-10MHz-CW-2047-Feb. QSL to: F6EEBA.

\* T22L-14Mhz-SSB-1209-Jan. QSL to: DL5UF.

\* 3DA0BX-Christine (YL)-21205-SSB-0521-Jan. QSL to: The Manager, Box 57, Big Bend, Swaziland.

\* T30DP-Beiaiti-14226-SSB-1141-Jan.QSL to: The Manager, Box 560, c/- Marine Dept, Betio, Tarawa, Kiribati.

\* V85E-Brian-21205-SSB-0518-Feb.QSL to: 2K2FKS.

\* ST0DX-Dennis-14222-SSB-0545-Feb.QSL to: WB2WOW Peter D Uberto, 625 Ratzer Road, Wayne NJ 07470 USA.

## From Here and There and Everywhere

Zbig VK2EKY advised that Mary Ann WA3HUP is not the QSL manager for his 7J6AAK callsign. In the January 1991 *AR* we incorrectly listed Mary Ann as a QSL manager for that callsign. Zbig made a video-film of his Pacific journeys, and he donated one copy together with some photographs to the video library of the VK2 Division. Many thanks Zbig.

Gray VK4OH advises of a future special event. The Hervey Bay Radio Club has obtained a special call for the month of August 1991, to coincide with the Festival of Whales held in Hervey Bay each year when the humpback whales arrive on their trip to the

south. There will be a special award. The callsign to be used will be: VI4HBW.

The correct QSL information of KD7P/K76 and KD7P/KH2 is: Bob Winters, Box 8265 MOU3, Dededo, Guam 96912, USA, and not KA2KX as previously stated.

Neil VK6NE, the WIA QSL Bureau manager for the VK9 and VK0 callsigns supplied further QSL addresses. VK0TS goes to Trevor VK1TW, VK0LL collects his cards from Kit VK2LL. The VK0JY cards should be sent to VK4CJO: J van de Geyn, 32 Wetherley St, Geebung, Qld 4034. VK9WB cards to be sent to: W Blanton, PO Box 6189, East Victoria Park, WA 6004. VK9ZLX is Peter VK8ZLX. VK2KGV/9 is now back at his home QTH.

The DX operation by VK3AWY on Cocos Island will be for seven to 10 days around 26 May 1991. Callsign used will be: VK9YJ. QSL to: VK3AWY.

"Murphy's Typographical Error" popped up in these notes in the February issue of *AR*. Zedan JY3ZH is not in Vanuatu (YJ), as every DXer knows.

During April, Monaco will be active on CW with the callsign 3A200SM to celebrate the 200th anniversary of the birth of Samuel Morse who invented the "morse code" still used today. He patented his method of dots and dashes in 1837.

Florence F6FYP and husband Sylvio F6EEM were active between 15-23 February from Cameroon as TJ1YL and TJ1CW respectively.

To commemorate the 100th anniversary of Ukrainian settlement in Canada, a number of special prefixes — VO7, VO8, VC1, VA1, VC9 — will be used by the Canadian amateurs during March and April. VA100U special-event station will be active on all bands CW and SSB. QSL to: VA1OOU via V3EIPR.

According to DXpress, the following callsigns were all pirate operations lately: TT8AK, 3A0AA, P5UU, FT8XT, TN6PG, TN6PG/D2, ZA0DX.

The callsigns VK9LM and VK9LA were used between 15 September and 6 March by DJ5CQ and Y21RM who were on Lord Howe

Island at that time. QSL for all contacts goes to: DJ5CQ.

Karl DL1VU was heard operating from Canton Island Central Kiribati as T31AF at the end of February. He will be there for a number of weeks, as transportation to those islands is predetermined by the round trip of the boat.

Jim VK9NS is intending to leave for Bangladesh on 9 March. He received permission to operate SSB, CW and RTTY. On 2 May, he will arrive in Bhutan with Kirsti VK9NL for a second visit, as Bhutan is still required by quite a number of amateurs as a DXCC country.

The Afghanistan activity of YA0RR has been approved for DXCC purposes.

Frank VK1ZL has operated a special call VK1WCC on the occasion of the Seventh World Conference of the World Council of Churches. QSL to: VK1WP.

YY5P was a special DX-island expedition between 8-12 February to Patos Island. QSL to: YV5ARV.

Miki HA8XX and Eli HA9RE arrived in South Cook Islands after the Niue Island activity. Miki operated as ZK1XX, and Eli as ZK1XL. They were active from 14-23 February. The last five days of their stay on Cook Island were marred by continuous rain and wind, the sign of an approaching cyclone. QSL for the South Cook operation goes directly to Miki, to his homecall HA8XX.

As you have probably observed, there is no RTTY news in this issue. Syd VK2SG is on his annual holiday — mobile — and he is enjoying a well-earned rest.

### Interesting QSLs Received

Last month I complained that there are no reports in this category of news. This month saw a deluge of cards, specially via the Bureau.

Note: W=weeks, M=months, YRS=years, FM=from, MGR=manager, OP=operator.

Direct cards received: J6LMV (3W FM OP), VP2EY (4W FM MGR), 6Y5DA (4W FM MGR), A22BW (5W FM MGR), 9M8WB (2W FM OP),

5B4SA (3W FM P), TG9AJR (12D FM MGR), S79KMB (3W FM OP), 9M600 (5W FM OP), PA3CXC/STO (9MO FM OP), C56/DL7FT (4MO FM OP), ZD9BV (10W FM MGR), ZD8BOB (6W FM OP).

Cards received through the Bureau: too numerous to mention in detail; over 80DX cards have arrived, some going back to QSOs two years ago.

### Thanks To You

Many thanks for the information and assistance received from: VK2DID, VK2EKY, VK3DD, VK4CRR, VK4DA, VK4OH, VK6NE, VK9NS, H44AL, HA8XX, JY6AAK, QRZ DX. The DX Bulletin and DXpress. Your support is always appreciated. Good DX and 73

Peter James VK3AWY will be operating from Cocos Keeling from 26 March through to 2 April. This operation will include the CQ-WPX contest. While on Cocos, Peter will be using VK9YJ as the callsign.

QSL for the operation is via his home call VK3AWY, which is correct in any callbook. Stations that QSL direct and include ICRs or postage will receive their cards from Cocos with a Cocos Keeling stamp.

Peter will be operating all HF bands from 80m through to 10m using an FL7000 linear amplifier supplied by Dick Smith Electronics, and he should have a good signal over most of Australia.

Peter will also be taking 6m equipment with him and will be listening for VK, as well as operating a keyer beacon using the collapsible Yagi that Steve VK3OT has lent him.

When not operating during the contest, Peter will call into the popular HF nets as well as operating on his own. Peter will also pay particular attention to greyline propagation on 80 and 40m from Cocos.

Albert Gnaccarini VK3TU

ar

## VHF/UHF AN EXPANDING WORLD

ERIC JAMIESON VK5LP  
PO Box 169 MENINGIE 5264

### Returning to the Real World

After several months in hospital and recovering from a further back operation, I am at present undergoing a period of rehabilitation at the Hampstead Centre, Adelaide, being taught various skills which will be of value to me at home and elsewhere should I remain confined to a wheelchair. I am grateful to those in charge at the Centre for the privilege of using their computer for the compilation of these notes which will now appear one month

earlier than if I had been obliged to wait until returning home to use my computer.

I cannot produce the beacon list or the Six Metres Standings List, as these are locked into my computer. However, I can say that pending the publication next month of the updated Standings, that presently John VK4ZJB heads the list with (from memory) 70 countries confirmed. More on this next month.

I am grateful to all those amateurs who have kept in touch with me, by telephone,

letters, cards and personal visits (including one by private aeroplane) — I will try to contact you all in due course. I am indebted to the editor of *AR* for his understanding of my position, and not applying pressure for a resumption of these notes before I could satisfactorily handle them.

### VK6 Beacon Information

Bob Blinco VK6KRC, president of the West Australian VHF Group Inc, has sent a brief note informing me of the present status of the VK6 beacons: all beacons are independently keyed and signing "VK6RPH Perth" followed by approximately a 30-second key-down period. 50.066 has on/off keying, 10 watts with a horizontal omnidirectional antenna. 144.460

has the same details as 50.066. 432.160 operates FSK with three watts and a horizontal directional antenna. 1296.480 is FSK with 1.5 watts, horizontal omni.

Other details: the 2m frequency has been changed to conform to WIA band plan for VK6 (formerly 145.000MHz). The six and two-metre beacons have been changed from FSK to on/off keying. The 70cm beacon has a temporary antenna — 2x15 element NBS Yagis, direction variable horizontal. All beacons are on air and temporarily located at Bob's QTH, 32 Beverley Place, Cloverdale, about 10km east of Perth. The 52.460 beacon is no longer on air. Thanks for the info, Bob.

## QSL Routes

BT4AG via JA9AG; CE3BFZ Pedro A Barroso, Box 13312, Santiago, Chile; CE0DFL Marco Meza, Box 7, Easter Island, Chile; DU1JPN via JA1UHM; EA6/G3JVL via G3JVL; HZ1AB via KP2YVD; KB6SL/CE3 Kevin Szot, c/- Citibank NA, Ahumada 48, Piso 2, Santiago, Chile; KC6GV via LA2GV; KC6CQ via VE3JDY; PY0FF via W9VA; TR8CA via F6CBC; V51E via K8EFS; V73AT via KX6BU, Kwajalein ARC, Box 444, APO San Francisco, CA 96555, USA; XW8KPL and XW8KVF via JA1UT; XX9JN via KU9C; XB0T via DL1SDSN; ZB2E0 John J Bautista, 47 Valiant House, VBE, Gibraltar; 4D3HSP OP:4F3BAA, Box SM217, Manila; 7Q7JA P/Bag 28, Mana Blabyre, Malawi, Africa; 717RM callbook address; 9Q5EE via K1RH. Thanks to Japan CQ Ham Radio and Bob VK6RO.

## Six Metres

A number of letters arrived during my stay in hospital, and these have been brought to Hampstead, and the following has been culled from them. In some cases the news is somewhat dated but, for the sake of the record, has been included. That which is late information is written at the end.

Ron VK4BRG advised in a letter dated 27/11/90 that there had been some interesting happenings during the month. 27/10: 0003 to 0010 four weak contacts to New Mexico; 0045 ZK3F Tokelau, QSL via JA1WHG. 0135 5W1XD; 27/10: 0059 N6XQ, K6STI; 4/11: 0049 9L1IUS; 0118 ZL2TPY on backscatter; 12/11: 0034 6W1QC 5X9, 17/11; 3D2PO worked 6W1QC, PZ1EE and heard the FY beacon, all when beaming over USA; 20/11: opening to Europe, scratchy contact with DK2EA; 24, 26 and 27/11 TE openings to KH6 and then JA. These plus some Es contacts within VK.

Warren ZL3TX has written to say the Christchurch six-metre beacon was recently re-located and fitted with an improved antenna which is program controlled. The beacon output is switched back and forth between favouring Australia and North America. The details are ZL3MHF or 50.043MHz at Christchurch, grid square RE66EN, ERP

80 watts. Reports would be appreciated to The Christchurch West Amateur Radio Club, PO Box 31-095, Ilam, Christchurch, New Zealand.

A card arrived in December from VK9LE (VK3OT) which listed a few details of contacts when Steve joined Peter VK9ZLX (VK3ZLX) for their Lord Howe Island DXpedition. Areas worked were 3/12: JA1, 2, 7, 8; 4/12: ZL1, 2, 3; VK1 to VK8 were worked for 100 QSOs, and these included VK6BE in Albany and VK6YU in Perth, about 4200km. Heard HL7GN working NI6E and XU1 Cambodia and FK8.

## VK5 to Europe

It had to happen eventually and congratulations to those involved. During the morning of 5/2 Col VK5RO noted that VK4ALM and VK4BRG and possibly others were working to 6W1QC in Senegal on the west coast of Africa. Later that day he observed plenty of TV signals coming from the north-west, and backscatter signals from VK3. At 1100 he worked OH2TI at 559, followed by SM6, OZ7, OZ1, LA9 and OH5. Hugh VK5BC was also able to work these stations and, it is understood, at least VK3OT and VK3LK.

On 6/2 the band was open to JA, ZL, KH6 and many stations in VK. On 8/2 Col VK5RO called VK4ALM, then turned the beam and heard G3HBR and, for about 40 minutes from 1000, he worked PA2, PA0, SM7, OZ1, G3, and possibly LA9; all were on CW with signals between 559 and 579. Roger VK5NY worked SM, OH, OZ and DL on SSB. Col said the working of these stations was very selective as VK5ZMK and VK5AMK heard nothing, although they live not far from Col. The PA stations were strongest, followed later by OH. The only VK3 to be heard at the time was VK3OT.

Col commented that two sets of conditions apparently prevailed for the two dates — on 5/2 that spread of area was narrow at the European end and wide in Australia, with the reverse the case on 8/2. Also, there was very little TV on 8/2.

On 9/2 at 1238 Col reported hearing EL3D on 50.187. It appears that possibly it was from a ship and a harmonic from the 25MHz band.

Steve VK3OT certainly did not miss the opportunity to work to Europe. A brief letter advises of his many contacts which, for interest sake, are as follows: 5/2 from 1022 to 1120, SM6CUG, OH2TI, LA9ZV, F2AJA, DL8CA, OZ7DX, JA5CMO, SM6CKU, G3HBR, all on CW with signals mostly 559, but rising to 599. OH2TI at 5x3 and SM6DER at 5x7 were worked on SSB. On 6/2, Steve worked ZL3TY at 5x9 at 0155 and ZL3TIC 5x9 at 0200. 7/2: 0500 JA7ZMA beacon was 529, and at 0940 heard OH2TI at 519 on CW.

Steve's best effort was on 8/2 when, between 0913 and 1104, he worked the following, all on CW unless otherwise stated: DK3EG, DL8HCZ, G3SDL, DK6JJ, ON4PFS, PA3EUI (using a vertical dipole), SM7FPE, SM7AED, OZ8RW, PA0OOS, OZ8RW (SSB),

PA0HIP (SSB), SM7SCO, PA0FM, G3WOS, G3FG, OZ1ELF, G3VVF, G4MFH, G4CCZ, G3HBR, G3NVO, PA3OIC, DL9AAL, PA2HJS, ON4AMX, OZ1DJ, OZ1ELF, OZ1DJ (SSB), SM7BAE, OZ1BVW, OZ6OL, SM7FJE (SSB), SM7FJE, DL8HCZ. TV was strong on 48 and 49MHz. That's quite an effort, Steve!

Bill Tynan W3XO/5 reports in QST's *The World Above 50MHz* that Richard G4AHM by last October had worked 92 countries on six, which illustrates what can be accomplished from Europe.

## Closure

As these notes have been put together over a period of a couple of weeks, I have now been informed I may go home on Friday 1/3, after an absence of several months; home in time perhaps for some F2 propagation on six metres during March and April.

One of the final skills I have been taught at the Hampstead Centre is to drive a car using hand controls, which will be a great help to my overall mobility.

Closing with a thought for the month: "Teenagers were put on earth to keep adults from wasting time on the telephone." (From Funny Funny World).

## 73 FROM THE VOICE BY THE LAKE

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## POUNDING BRASS

GILBERT GRIFFITH VK3CQ  
7 CHURCH ST, BRIGHT 3741

As you are now doubt aware, I missed the deadline for this column for the first time last month. I have noticed over the past year that it is becoming more difficult to write, as I never seem to find the time to spend on the air — a common problem by all accounts.

Perhaps this is my subconscious asking for help and maybe some stories and input from readers. Any offers?

Results of the February article have been promising, indicating that Morse is not on the way out yet. I have sent out 24 disks full of Morse programs in less than two weeks! Thank you all for sending the return postage/package as requested.

Steven Merrifield VK3MBO also used his disk to send me some of his own Morse programs, which I am including now on the disk with Gary Bold's programs. Last time Gary

sent me a disk he included a program called SKYGLOBE (just to fill up the disk) which is an absolutely fascinating astronomy program. Consequently I borrowed the local school's 10-inch reflector (that's telescope) and our family spent a week gazing at nebulae, clusters etc, to the detriment of radio yet again. Even though I managed to track what I thought was the MIR spacecraft through two passes.

Over the past couple of months I have received over 50 replies to my new licence proposal, and I will be forwarding the lot to the WIA for, I hope, some action. I hope that you will all support my efforts when the WIA asks you officially.

For my next trick . . .

How many of us remember those first hesitant steps in actually communicating using the code? Wasn't it a disaster? I would

like to make available some information that will help budding Morsiacs to overcome the shakes and downright fear one usually experiences when going on air for the first few times. A few years ago I would have tried it in book form, but the market is too small to attract the interest of a publisher; so what about computer disk files?

If you are interested, and especially if you can offer suggestions, write to me with your ideas, experiences, methods of operating, setting up the shack etc, I will attempt to put together a 'handbook on disk' which can help to overcome the new operator blues. You can also contact me on packet, VK3CQ@VK3EEE.

I will at the same time run the 'handbook on disk' as a series in Pounding Brass for the benefit of those who don't have a computer.

We could eventually see a WIA membership package which includes a disk containing Morse learning programs, training documents, and if you can imagine it, even the full theory course, exams, regulations, licence applications, log book, QSL printing software, packet software etc, etc, etc. The mind boggles.

ar

## AMSAT AUSTRALIA

MAURIE HOOPER VK5EA  
11 RICHLAND ROAD NEWTON SA 5074  
PACKET: VK5EA@VK5WI

### Russian Satellite Update

HR AMSAT news service bulletin 054.01 from AMSAT HQ Silver Spring, MD February 23, 1991. To all radio amateurs:

### New Birds Show Signs of Life

This turned out to be a banner week for the new satellites (RS12/13 and AO21). Mode A of RS-12 was turned on earlier in the week and the beacon on 29.408 was described as very loud. However, later in the week it was reported that there may be a problem with RS-12 caused by interaction with the Main Pay-load Cosmos 2123.

Ed O'Grady KE2VC was listening to RS-12 on Mode A and heard an inordinate amount of CW in the passband and, after listening for a few seconds, determined that it was in fact the unmistakable sound of navigation satellite signals. Upon returning his FT-736 over to 150.000 (Cosmos 2123's frequency) discovered a perfect match! Apparently, the Nav downlink (which had not previously been observed) is getting in to the amateur 2M receiver. This appears to be reminiscent of a similar situation with RS10/11 and its parent, Cosmos 1861.

### AO-21 Turned On Early

Peter DB2OS reports that the AO-21 RUDAK beacon and RM-1 CW beacon were switched on around 2140 UTC on 22 February '91, six days earlier than expected. GEOS had stated last week it would not power up the

equipment before 28 February. While waiting for the next UO-14 pass, Peter had his receiver on 145.975 when the squelch opened and he found RUDAK-2 transmitting 400 Bit/s PSK telemetry (AO13 format) on 145.983MHz with an extremely strong signal. The CW beacon on 145.822 was also on with very good signals.

Once software is uploaded to RUDAK-2, the RUDAK beacon will be switched to 1200 Bit/s PSK AX.25 (like FUJI, PACSAT etc) transmitting telemetry and short bulletins. The ROBOT mode and RUDAK MAILBOX RBBS will be switched on later after final check-outs. Watch the RUDAK beacon, UO-14, and ANS for further information.

Subject: MICROSAT UPDATE

HR AMSAT news service bulletin 054.03 from AMSAT HQ Silver Spring, MD February 23, 1991. To all radio amateurs:

### New Version of PG

The newest PG.EXE (Y910207R) has been released and is called PG0207.ZIP. It is on UO14, CompuServe's Hamnet, DL.5 and on the DRIG BBS under Microsat section (available to all AMSAT members). It will appear on AO-16 later this week and may be downloaded, though it will not be broadcast until file xAEO, containing PG0206.ZIP is finished in a few weeks.

This version of PG has a couple of fixes and enhancements which may help solve some of the problems people have been experiencing.

The main changes are:

— MALL OFF added to automatic configuration  
— MON OFF before directory viewing (and MON ON afterwards)  
— Same for utility menu  
— Bug fixed to stop the screens of ; (and erratic logins)

— Enhanced handshaking between TNC and PG when issuing commands. This should stop any instances where PG overruns the TNC during commanding. Perhaps this will stop the corrupted callsigns and (just seen once) corrupted LCALLS.

It is suggested that you check the operation of LCALLS and BUDLIST on your TNC. If reports from the field are all to be believed, some TNCs will monitor packets from UOSAT-11 even with

LCALLS UOSAT3-12  
BUDLIST ON

With MALL OFF and MCOM OFF, the above budlist setting should filter out all but the UOSAT3-12>BBSTAT messages. Check this in Terminal mode.

## FO-20 PSK Modem Improvement for Microsat Use

by James Miller G3RUE 1991 Feb 19

### Introduction

Some users of my 1200 bps PSK modem have commented that data recovery with the microsats is poor, difficult or, in a few cases, impossible.

Personally I have no problem whatever with my standard modem and standard FT736R, but persistent reports prompted further investigation.

Fuji-Oscar-20 and AO-13 (400 bps) generate "pure" PSK. That is, the carrier phase is either 0 degrees or 180 degrees, and nothing else.

## SATELLITE ACTIVITY FOR NOVEMBER/DECEMBER 1990

### 1. Launches

The following launching announcements have been received:

Int'l No	Satellite	Date	Launch Nation	Period min	Apg km	Prg km	Inc deg
1990-097B	USA-67	15 Nov	USA	Deployed from STS-38			
103A	USA-66	26 Nov	USA	714.8	20279	19935	54.8
104A	COSMOS 2106	28 Nov	USSR	95.2	550	526	82.5
105A	USA-68	02 Dec	USA	100.6	845	729	82.5
106A	STS-35	02 Dec	USA	91.7	363	350	28.5
107A	SOYUZ TM-11	02 Dec	USSR				
108A	COSMOS 2107	04 Dec	USSR	92.9	442	414	65.0
109A	COSMOS 2108	04 Dec	USSR	89.6	339	196	62.8
110A	COSMOS 2109	10 Dec	USSR				
110B	COSMOS 2110	10 Dec	USSR	11h16m	19142		64.8
110C	COSMOS 2111	10 Dec	USSR				
111A	COSMOS 2112	10 Dec	USSR	100.7	818	774	74.1
112A	RADUGA 26	20 Dec	USSR	1443.0	35937		1.3
113A	COSMOS 2113	21 Dec	USSR	89.2	307	189	64.8
114A	COSMOS 2114	through					
114F	COSMOS 2119	22 Dec	USSR	114.1	1442	1388	82.6

### 2. Returns

During the period 46 objects decayed, including the following satellites:

1985-018A	COSMOS 1631	08 Dec
1990-059A	BADR-A	08 Dec
1990-067A	SOYUZ TM-10	10 Dec
1990-085A	PROGRESS M-5	28 Nov
1990-087A	COSMOS 2101	30 Nov
1990-092A	COSMOS 2102	12 Dec
1990-098A	COSMOS 2104	04 Dec
1990-106A	STS-35	11 Dec

### Notes

1990-106A STS-35 operated amateur radio through Ron Parisse WA4SIR.

1990-107A SOYUZ TM-11 docked with the MIR space complex on 4 December.

1990-067A SOYUZ TM-10 returned from MIR carrying two Soviet cosmonauts and a Japanese journalist. It landed at Arkalyk, Kazakhstan.

1990-085A PROGRESS M-5 undocked from MIR on 8 November and landed in the USSR. Bob Arnold VK3ZBB

phase jitter.

The cure is to upgrade the data filter. There is a spare op-amp on the board, so by adding just four resistors and two capacitors, a three-pole filter can quickly be implemented (15 minutes). The filter offers some 30dB attenuation to the effects of excessive phase noise, and you'll get effortless 100 per cent data recovery from PACSAT, WEBER and LUSAT.

### Application

This modification is for PCBs marked "JAS-1/FO-12 MODEM (C) 1986 G3RUH", issues one and two.

### Circuit

Note that the existing R30 is removed, and the input of this circuit is from its left-hand hole, close to the legend "VR2". The existing C3 remains and becomes part of the new filter. The circuit uses a spare section of op-amp U5 so only six components Ra, Rb, Rc, Rd, Ca, Cb are new.

### Construction

Ra, Rb, Rc, Rd, Ca, Cb are fixed to the underside of the PCB. Pin 14 of U5 is the pin nearest the legend "U5", and don't forget to link pins 13 and 14. Make sure that components and leads cannot accidentally touch PCB tracks.

### Test — the "EYE"

Tune in a satellite as normal. Set the oscilloscope to 2/div vertical and timebase 0.2 ms/div. Trigger from TP4 (1200Hz), and examine the waveform at TP3. You should see the characteristic "eye", with amplitude 6v pk-pk, centred on approximately 6v.

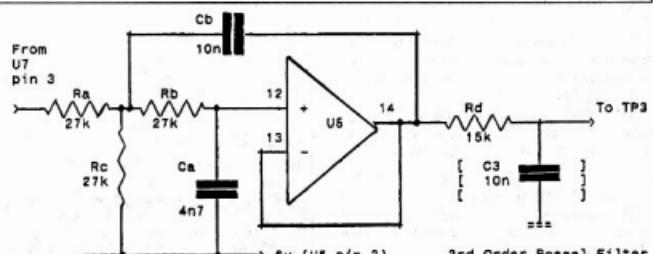
The TNC samples this waveform at the widest part of the eye. If it is above the midline, it detects a "1", if below a "0". So the quality and openness of this eye are a measure of detection robustness.

### Don't Forget

Two points that are as important now as they ever were.

- 1. Audio Carrier Frequency:** Make sure that you have the optimum audio carrier frequency. It'll be in the region of 1400-1700Hz (at TP1). Lock the modem on to a satellite at the start of a pass when doppler changes slowly. Look at the eye and **VERY, VERY** gently vary VR1. This will remotely auto-tune the radio up and down. Leave VR1 at the point where you judge the eye to be at its best; wide open and symmetric.

- 2. Detector Threshold:** Input SSB radio noise to the decoder. Adjust VR2 for average mid-scale reading on the centre-zero tuning meter. Alternatively, set it for exactly 50 per cent of the 12v supply. It



Note:  $10n = 0.01\mu F = 10000pF$   
 $4n7 = 0.0047\mu F = 4700pF$

Use 10% or better

Extensive investigation shows that all three microsats (AO-16, WO-18 and LO-19) generate random phase noise. I (G3RUH) found peaks of +/-27 degrees on occasions with +/-10 degrees RMS scatter typical. My modem, being designed "cold" and in

wide circulation (1986) before FO-12 had even transmitted a packet, expected clean PSK. So its post phase detector (ie data) filter is an RC network R30/C3. This is entirely satisfactory for FO-20, but it hasn't really enough smoothing to deal comfortably with the microsat

should ideally be the same voltage as at the mid-level of the eye.

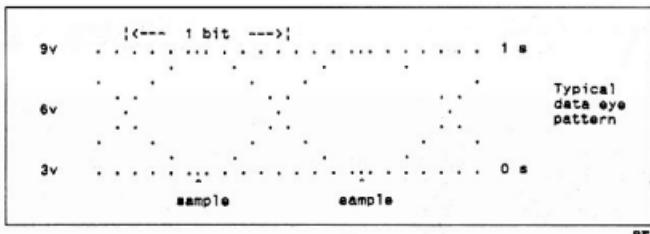
## Thanks

Special thanks to VK5AGR, VK5HI, VK5ZK and G4WFQ for acting as testers to validate these findings.

### Distribution

You are invited to circulate these notes on all appropriate BBSs.

73 de James G3RUH @ GB7DDX 19 Feb 1991 (Please note my new BBS)



## EMC REPORT

HANS RUCKERT VK2AOU EMC REPORTER  
25 BERRILLE RD  
BEVERLY HILLS 2209

1) Dr Ing Gerhard Blechert DL9TJ, DARC EMC expert, recommends: when a radio amateur intends to purchase an electronic appliance, he should ask the salesperson or manager to state on the sales docket that the equipment can be returned or exchanged should it prove to have insufficient immunity against legally permitted transmitter operation, or when it causes interference to short-wave reception. It may otherwise be very difficult or impossible for the radio amateur "to bring his own house in order".

2) Radio Communication, January 1991 (submitted by Norm Burton). "Is your own house in order?" By G3HB.

This very detailed report covers many steps the radio amateur should check, to avoid, or at least to minimise, any unwanted radiation, except the one via the transmitter antenna. Transmitter/transceiver harmonics: very strict standards exist in Germany. The coaxial or LC trap. SWR meter — some SWR/power-meter diodes generate harmonics. The low pass filter: some filters have capacitor self-resonances which cause attenuation gaps above 70MHz. Antenna tuning unit and  $\pi$  filter. Feeder radiation. Antenna resonances. Transmitter cabinet shielding and radiation from attached cables. The following test is recommended: connect a dummy load to the transmitter, run full power, and check the appliances (TV, VCR, HiFi gear etc) to see whether the transmitter has leakage radiation or whether the transmitter power goes only out from the antenna. Earthing is not always effective, especially at VHF and UHF. RF cable-chokes may be fitted with ferrite cores at power supply input and output ends. The EEC EMC standards after 1992 should teach manufacturers, dealers and salespersons, that the customer has the right to accept only appliances which meet these susceptibility standards. It is unfortunate that the attached EMC approval sticker on appliances does not always guarantee that the equipment actually meets the standard, as the

Customer-Association (Warentest) found out in Germany. There could be several reasons for this, like fluctuation on production quality or manufacturer tricks. It is hoped that products with substandard EMC properties become uneconomical to produce, and that these are not sold in Third World countries where no EMC testing is carried out.

ERO-EMC '90 by G4JKS  
(submitted by Norm Burton)

Electronic equipment manufacturers now have a new range of "test equipment" needed to check appliances and electronic equipment of all kind to see whether they meet the 1992 EEC EMC standards. It is strange that now some Hi-Fi gear manufacturers claim that they fear that some HiFi equipment may lose desired features if components have to be added to obtain EMC standard approval. They had at least 40 years to learn how to design their products to have adequate immunity. One of the early and very comprehensive publications was by the Remington-Rand Advanced Research Laboratory, Connecticut, USA. The writer had several long QSOs with the author, Phil Rand W1DEM, who was kind enough to send me two copies of his book "Television Interference", with publications from 1948-1954.

Transmitter frequencies for all services (including those for amateur radio) are allotted by the ITU world-wide and by national governments. It is up to the appliance industry to produce equipment which responds only to signals of the desired frequency, and has immunity against unwanted signals, being effectively selective. It will now be necessary not only for manufacturers but also for governments and other organisations (customs, consumer associations etc) to obtain EMC-testing equipment and to train operators in its use, to make sure that no illegal practice takes place. It is possible that some equipment only just meets the required EMC standard, and that by testing several units of the same model at random, the result may reveal some deficient examples. If, for example, the

equipment starts to fail at 3V/m field strength in the test-cell, it is likely that it fails also at 2V/m. Well-known AQL (accepted quality level) methods should be used.

Doug Friend VK4AIZ submitted a paper: *New Scientist* December 1990 title: "Sensitive flowers of British HiFi may be trampled". This paper describes the same questions. Publications like this one should be made available to appliance importers and dealers, who may more readily accept and trust these reports on industry problems than the explanations from us radio amateur customers. The reader can see that the industry is now at last forced to accept the blame and has to do something about it. The radio amateur is no longer the only one blamed for reception disturbance, usually wrongly called interference, when lack of equipment selectivity, filtering and shielding (design shortcomings) are the fault. We radio amateurs can say: "We already told you so 40 years ago, and over 60 years ago as far as AM radio is concerned."

Several QST-EMC reports indicate that EMC standards are only very slowly accepted in the USA, but at least the FCC supports the not-guilty radio amateur when a neighbour starts court proceedings against the radio amateur, when he transmits a clean signal, when a below-standard appliance is affected. When local councils wish to restrict the antenna heights, they are being told that a higher beam antenna helps to overcome EMC problems in the neighbourhood. In Spain, it is a part of the transmitter licence to be also granted an effective antenna installation.

It can take a long time to replace popular—but wrong—beliefs by physics facts. ar

Help Stamp out  
stolen  
equipment —  
Keep a record of  
all your  
equipment serial  
numbers in a  
safe place

## SPOTLIGHT ON SWLING

ROBIN L HARWOOD VK7RH  
52 CONNAUGHT CRES WEST LAUNCESTON 7250

By the time you are reading this, the Gulf War may have already ended. I have been following developments on this conflict via shortwave, particularly from the BBC World Service on its numerous frequencies. As many of you are aware, the BBC has had to rearrange its program output at short notice to bring to the world the latest developments within the Gulf region. Another source that I have found is a feeder for the British Forces Broadcasting Service on USB on 12127 kHz at 2030 UTC. It consisted of a news bulletin plus a relay of BBC domestic radio current affairs. This is presumably for British troops within the Gulf.

The long-awaited ground offensive in Kuwait finally happened on 24 February. It was a major operation, with the Allied coalition scoring some speedy victories over the Iraqis, thousands of whom have already surrendered. Present indications are that it will be a short time before Kuwait succumbs to the combined firepower of the Allied coalition.

I have been hearing numerous Arabic broadcasts also and, as I cannot speak or understand that language, I have had to rely on the current World Radio TV Handbook, plus some DX bulletins, to assist in identifying these particular broadcasters. Many of these have extended their Arabic programming because of the Gulf War. For example,

Radio Abu Dhabi in the United Arab Emirates on 21735 and 25690 kHz from 0500 UTC.

Have you noted on the TV news the use of portable shortwave radios by troops in the desert? Presumably they are keeping in touch with news from home. These units are probably scattered across the Arabian deserts and out of range of the low-power FM stations which were set up specifically for the Allied troops. Also, there was a tremendous upsurge in sales within the USA of shortwave receivers, particularly after the Gulf Crisis erupted in January. Both of these do indicate the continued effectiveness of shortwave broadcasting, despite the instant images of the television newscasts.

It does now appear that Allied bombing did indeed put the Iraqi external senders out of action late in January. The Iraqi and Kuwaiti sites were carrying a common program until they went silent. The only shortwave signal that has been reliably reported is on the 90m band, plus an odd frequency of 8350.3 kHz. This is, of course, in the maritime allocation, and I presume that they pressed into service a marine transmitter to get the signal to the sites when the telecommunications network was entirely destroyed.

After the conclusion of hostilities, there will be scars within the region for some time. Therefore, it should be expected that short-

wave broadcasting into the region will be increased so as to influence public opinion within the region and beyond. One problem has pointed out others that need attention if there is going to be peace in the Middle East.

Radio Canada International has suffered from a budget blowout of its parent network, the CBC. The future of the International Service is in doubt, at the time I write this. There has been talk of the Canadian Ministry of External Affairs taking it over, or funding its continuation. But indications are that if it does continue to survive, there will be cutbacks in languages and programming. One report was that it would be reduced to a relay of domestic English/French programming onto shortwave, similar to Radio New Zealand.

RCI has entered into agreements with several international broadcasters to share their senders. Deutsche Welle, the BBC, Radio Japan, Radio Korea, Austrian Radio, plus Radio Beijing, are the broadcasting organisations which have used the CBC Sackville site to re-radiate programming to North America. Conversely, RCI has utilised the senders of the respective organisations to get a stronger signal to their target audience.

Another relay base has been opened. This time it is Sri Lanka. Radio Japan recently opened its Ekkala site in the south of that nation, well away from the civil war there. Deutsche Welle has had a relay base at the Trincomalle, in the east of the country, and has been operating spasmodically, because it is right in the centre of the civil war. I can easily hear Radio Japan on 17820 from Ekkala at 0400 UTC.

When you regularly partake in nets you build up pictures of what the other people look like. So it is a real pleasure to meet the "voices on the air" when the opportunity arises as Robyn VK3ENX found out when she went to Adelaide earlier this year. Marilyn VK3DMS found this out also when she met her sponsored twin Marilyn WA4NRX from Oakridge, Tennessee, when they were both in Adelaide in February.

Mavis VK3KS was number 13 YL when she got her licence in 1939. ALARA and the WIA Federal Historian would be most interested to find out some information about the other 12. One of these was Florence McKenzie, the other 11? If you have any information please send it to the

ALARA Historian  
Marilyn Syme  
PO Box 91  
Irymple Vic 3948

Welcome to new sponsored members Sue ZL3AHT, Judith ZL3AGE and Irene GM0FTX.

ar

## ALARA

JENNY ADAMS VK3MDR  
70 KANGAROO GROUND RD WATTLE GLEN 3096



Marilyn Syme  
VK3DMS and her  
sponsored 'twin'  
Marilyn Wright  
WA4NRX from  
Oakridge, Tennessee,  
when both were in  
Adelaide in February  
1991.

Robyn VK3ENX met some of the VK5 girls over morning tea when she was in Adelaide in January 1991. L to R: Robyn, Meg VK5AOV, Jenny VK5ANW, Denise VK5YL and Sue Mahoney (XYL VK5AIM).

# FTAC NEWS

JOHN MARTIN VK3ZJC  
FTAC CHAIRMAN

## Acknowledgements

My thanks to all those who supplied updated information for the repeater listings in the February issue.

### New VHF-UHF Records

Eight new records have been added to the list over the summer period. A new national 6m record has been set by VK8RHH, breaking the previous record by nearly 200km. There is also a first-ever ATV record for the 13cm band.

6 metres: National VK8RHH to 8R1AH 18857.9km  
6 metres: VK2 VK2BBR to G3JVL 16689.7km  
6 metres: Digital modes VK4KHZ to JH1WHS 7234km  
2 metres: VK1 VK1VP to VK4ZSH 936.4km  
2 metres: Digital modes VK3ZQB to VK3ZJC 268.6km  
70cm: VK1 VK1VP to VK4ZSH 234.1km  
23cm: VK1 VK3YTV/310 VK3ZBZ 117.8km  
13cm: ATV

## EME Record Update

The current EME records have stood for some years and it is understood that they have been superseded. At present there are national EME records but not state records. All EME operators are invited to make new claims for both national and state records.

## Mobile Record Conditions

A recent claim for a "pedestrian mobile" record was rejected on the grounds that it did not fit the mobile record criteria. A letter from Ed Penkis VK1VP has raised the issue of mobile records again. He poses these questions:

"What is really mobile? Can I drive my utility with a 2m dish mounted on it and claim a mobile contact? I understand that pedestrian mobile is not acceptable. Should we have only one mobile subdivision, or more, like: leg drive (pedestrian), wheel drive (car), chain drive (snowmobile, tractor), propeller drive (aircraft), wind drive (glider) etc?"

To claim a mobile record, the station must be installed in a vehicle and be capable of full operation while the vehicle is in motion. There are some provisos:

— The vehicle must be on land (temporary departures from terra firma due to pot-holes would be permissible). Snowmobiles would therefore be okay, but gliders would not. Hovercraft would fall into a grey area.

— The vehicle must be a vehicle. "Leg drive" would be in the home/portable category and not mobile. Horses are a marginal case —

they go on legs but they are basically vehicles, and can carry saddle-mounted antennas. The same would apply to bullock drays and camel trains. Other specialist vehicles such as cherry-pickers would also be acceptable, despite the hazards attendant upon their use.

— The antenna would have to be either omnidirectional or able to be rotated by some means other than making repeated U turns. This problem would be of minor concern to Canberra residents, who could complete one over per circuit.

There is one loophole. Although the station must be usable in a moving vehicle, the vehicle need not actually be moving at the time of the contact, or even be capable of moving. This would allow the use of derelict vehicles, even including those with no engines. A person using an old railway carriage as a holiday home could therefore gain both home and mobile records for the one contact.

In this case we would have to judge the "vehicularity" of the station by its primary use. Hence the railway carriage would be in the home category, even if it were capable of locomotion. On the other hand, if the occupant of the carriage were in a wheelchair, he could satisfy the mobile criteria without having to go outside.

In any case, it is clear that stations claiming to be "home on a pig's back" will pose serious classification problems and may therefore expect some delay in the processing of their record claims. ar

## KNUTSHELL KNOWLEDGE

GRAHAM THORNTON VK3IY

A brief overview of what other magazines have to say. All of the periodicals referenced below are held in the Executive Office Library. As a special service to **Members Only**, a photocopy of any complete article is available for \$2.50 posted. To circumvent any copyright problems, please be sure to state "The information is required for the purpose of private study". Address your request to 'The Librarian, Executive Office WIA, PO Box 300, Caulfield South Vic, 3162.'

## Antennas – Switches

**Mast-Mounted Antenna Switch.** Paul Tait VE3ERK, *QSTVE* Jan 1991 pp 3 - 4. il diag, ccts. Two single pole change-over relays, mounted on the masthead, are arranged to provide a remote single pole three position antenna switch. A single pair of wires carries the 13.8V DC feed to the relays. The switch position is determined respectively by no voltage, or DC polarity.

### – Yagi

**Optimal Spacing for Yagi Arrays.** John White VE7AAL, *QSTVE* Feb 1991 pp 3 - 4. il graphs. The theoretical 3dB gain obtained by

stacking two Yagis side-by-side or vertically, will not be obtained if the two apertures overlap. Information is provided to enable the correct spacing to be determined from the known gain of each of the two Yagis.

## Computers – Accessories

**Hardware Display for a PC's Clock.** Marko Severin and Peter Phillips, *EA* vol 53 No 1 Jan 1991 pp 162 - 165. il photos, cct and cmp. A plug-in board, suitable for IBM XT or AT, which displays a real time LED readout from the computer's internal clock. Kit is available for Aust\$59.90.

**RS-232 Interface for Decoders.** Peter Laughton VK2XAN, *EA* vol 53 No 1 Jan 1991 pp 166 - 168. il photos and cct. A low cost construction project to enable the obsolete, but reliable, Decwriter printer to be used with any computer having an RS-232 port.

## Filters – Band Pass

**A Diode-Switched Band Pass Filter.** Doug DeMaw W1FB, *QST* vol LXXV No 1 Jan 1991. il photo, ccts. Remote switching of band pass filters is accomplished by switching a DC current through 1N914 silicon diodes. The

circuit given is applicable to receiver front ends or SSB excitors.

## Narrow Band Modes – Decoders

**Listening Post II Fax/RTTY/Morse Decoder.** Jim Rowe VK2ZLQ, *EA* vol 53 No 1 Jan 1991 pp 80 - 84. il diag, photos, cct. A review of a kit designed by Tom Moffat VK7TM, which operates with IBM compatible computers.

## Packet – Hardware

**Packet Hardware for Beginners.** Bruce S Hale KB1MW7, *QST* vol LXXV No 1 Jan 1991 pp 20 - 23. il diag, photos and cct. An elementary look at the hardware requirements for getting started in packet. The wiring of a serial cable between TNC and computer is described in detail. Full adjustment detail is given for achieving successful results.

### – Terminals

**Low-Power Portable Packet Terminal.** Steven Avritch WB1EOB, *QEX* vol 107 Jan 1991 pp 3 - 7. il photos, cct, pcb and cmp. A low-cost, do-it-yourself substitute for a PC terminal. Designed around a Motorola MC68HC705C8 single-chip microcontroller, the unit has a 40 x 2 line LCD display. Ordering information is given for a complete kit costing US\$75.

## Propagation – VHF/UHF

**Does Path Loss Increase with Frequency?** Rick Campbell KK7B, *QST* - Technical Correspondence, vol LXXV No 1 Jan 1991 p 38. A mathematical discussion which concludes that the signals between portable hilltop antennas actually become stronger as the frequency of operation increases.

## Power supplies –

### Series Regulated

**Regulated Power Supplies.** Peter Phillips, EA vol 53 No 1 Jan 1991 pp 68 - 72. il diags, photos and ccts. An educational dissertation on zener diodes leading to fixed and adjustable three terminal regulators. A specific design is presented for a 2 - 20 V 1A adjustable regulated power supply, using a 317K IC regulator.

## Switching

**Switching Power Supplies for High Voltage.** Timothy P Hulick W5QQQ, *QEX* vol 108 Feb 1991 pp 3 - 9. il photos, ccts. A general outline is given for H bridge switching design. Enhancement mode MOSFETs are discussed, with particular emphasis on their role as controlled switches. A specific design is offered for a switched mode power supply suitable for high power linear HF amplifiers. This 100 kHz supply can deliver 1.5A at 2000V. The total weight of the equipment is less than 8 lbs.

## Receivers – Characteristics

**Effective Receiver Dynamic Range.** Zack Lau KH6CP, *QST* - Technical Correspondence, vol LXXV No 1 Jan 1991 p 38. A discussion on how receiver sensitivity affects dynamic range. The Author considers the effective dynamic range of a receiver to be the range between the system noise level and the

loudest signals that don't create new (unwanted) signals above that noise level in the receiver.

## Satellite Equipment – Modulators

**Microsat Bi-Phi Modulator; Interfaces with any VHF TNC.** John C Reed W61OJ, *QEX* vol 107 Jan 1991 pp 10 - 13. il photos, ccts and graphs. The device is suitable for modulating an FM signal with Bi-Phi (Manchester biphasic), necessary for uplink access to Microsats and the Japanese FO-20.

## Technology –

### Surface Mount Devices

**A Surface-Mount Technology Primer.** Part 2. Bryan P Bergeron NU1N, *QST* Vol LXXV No 1 Jan 1991 pp 27 - 30. il diags. A fundamental discussion of the construction, and the handling and soldering precautions necessary for passive SMD components.

## Transceivers – Product Reviews

**A New 2m FM Transceiver - 1.** Jim Rowe VK2ZLO, EA vol 53 No 1 Jan 1991 pp 94 - 101. il ccts. The circuitry of a prototype kit transceiver developed by Dick Smith Electronics is examined in detail. This 5/25W kit covers the entire 2m band in 5 or 25 kHz steps with 24 memory channels; 600 kHz repeater offset is provided. With a nominal 13.8V supply, the equipment draws 0.5A on receive and 6A when transmitting.

**Kenwood TS-950SD MF/HF Transceiver.** James W ('Ruse') Healy NJ2L, *QST* vol LXXV No 1 Jan 1991 pp 31 - 35. il graphs, photo. A detailed report of the examination of this equipment.

### - QRP

**A Portable QRP CW Transceiver - Part 2** (Transmitter half). Gary A Breed K9AY, *QST* vol LXXV No 1 Jan 1991 pp 17 - 19, 23.

## BOOK REVIEW

STEPHEN PALL VK2PS  
PO Box 93 DURAL 2158

## The DXCC Companion: How To Work Your First 100 Countries

One hundred and twenty-four pages, soft cover. Published by the American Radio Relay League (ARRL). First edition 1990.

This book will be a great help for those who want to find out more about the "mysterious" DX world. Even the "oldies" of DX will find this book a useful tool and companion — as the title properly suggests — in their quest to conquer the 320-odd DX countries. The book is written by Jim Kearman KR1S in a bright and humorous style, and it takes the reader

through the various steps to become a knowledgeable person. Whilst it does not cover absolutely everything about DXing, it talks about antennas, equipment, the use of double VFOs, split-frequency operation, morse keys and keyers, DX log-keeping, country prefixes, DXCC countries, foreign language phrases, QSLing, pile-ups, DX-nets and list operations, DX newsletters and many other subjects which

il photos, ect. A 5 watt 20 m transmitter is described, using a MRF475 transistor in the final. Integrated circuits are used, together with discrete transistors. Full construction details are given, including coils and transformers. The alignment procedures are described. All harmonics and spurious emissions are at least 40 dB below the fundamental output.

## Transmitters –

### Frequency Synthesizers

**HF Frequency Synthesizer...Easier Than Ever.** Pierre Boillat HB9AIS, *QEX* vol 107 Jan 1991 pp 14 - 15. il photo and ect. Circuit is based on new Motorola LSI IC, the MC145163. The circuit covers the frequency range 4.5 - 9.999 MHz in 1 kHz steps. Finer frequency control is possible using an optional VXO also described. Any VCO may be used, but the Author has chosen a Colpitts for stability and low noise. The frequency may be lowered to include the 80m band by adding a few turns to an inductor. Cost of parts is quoted at about US\$20, and it is claimed that only 3 or 4 hours are needed for construction.

## Glossary of abbreviations

il	The article contains illustrations, a list of which follows.
cct	A circuit diagram
cmp	A component layout drawing
EA	Electronics Australia
diag	A mechanical drawing
pcb	A master drawing from which printed circuits may be produced
QSTVE	QST Canada
VCO	Voltage Controlled Oscillator
VXO	Variable (frequency) Crystal Oscillator

The above items are reproduced from *Amateur Radio Technical Abstracts* Volume 1 1991 ISSN 1036-3025 - to be published. ar

are an advantage for the DXer to know.

It is a useful book for the beginners and for everybody else who has some interest in long-distance communications via amateur radio. The America price of the book is US\$6 plus postage. However, with the price converted into Australian dollars, and the cost of shipping etc, the local price becomes \$12.

Before you rush off to place your book order directly with the ARRL, first contact your divisional bookshop. They either have the book or can order it in for you from their usual sources.

Pleasant reading, good luck and happy DXing. ar

**Remember to leave a three second break between overs when using a repeater**

# DIVISIONAL NOTES

## VK2 NOTES

TIM MILLS VK2ZTM

### Annual General Meeting

Members are reminded that the AGM for 1990/91 will be held at Amateur Radio House, 109 Wigram Street, Parramatta at 2pm on Saturday 4 May 1991. Proxy votes must be received at that address by 10am on the same day. The Annual Report and financial statements are contained in a booklet which is made available to members by either an insert to *Amateur Radio* or separate posting as required. The meeting agenda is included in the booklet, together with a QSL distribution card and the membership card for the coming year. There are also details of an offer to all financial full members of the NSW Division to be included in a draw for a two-metre handheld. An alternative draw is available to associate members.

### QSL Bureau

Members are advised that the VK2 QSL Bureau is now back on line. A lot of cards were distributed at the Gosford field day. Postings have been made to some recently. There are still many amateurs who need to notify the Bureau about what is required for cards to their callsign. All communications other than OUTWARDS cards should be directed to the QSL Bureau, c/- PO Box 1066, Parramatta 2124. Only OUTWARDS cards should be sent direct to PO Box 73, Teralba 2284.

### Dural

The VK2RSY beacon which operates from VK2WI at Dural suffered some antenna damage during winds last January. While repairs were carried out, the six and two-metre systems ran on temporary vertical antennas. The 70cm fed into a horizontal Yagi pointed north. The original antennas are being repaired and may be back in service by now. ... The Dural driveway which was washed out has been reconstructed ... Please note: the construction of the six-metre VK2RWI repeater is still under way. Amend the reference in the callbook and February data section to read L or P. While on the six-metre repeater subject, the Repeater Co-ordinator Barry VK2AAB has received several club requests for an allocation. Most of these have been processed. Any other club or group seeking a six-metre allocation should direct its written enquiry to the Division at PO Box 1066, Parramatta 2124 or on fax to (02) 633 1525.

### First Regional Meeting

The first meeting of Regional Co-ordinators

was held on the Gosford Field Day weekend on the Central Coast. A lot of ground was covered. The field day attracted the usual large crowd. The Division conducted a WARCC92 raffle which raised a couple of hundred dollars ... The next country field day will be Port Macquarie over the June long weekend ... In last month's notes a reference that the current Australian callbook was sold out. A few more have been obtained should you still need a copy.

### New Members

The following joined the NSW Division during February. A warm welcome is extended to them.

A A Akhtar	VK2XVE	Marrickville
R S Beckett	VK2ABY	Roselands
W Bradwell	VK2TBF	Abbotsbury
J A Burgess	VK2XRE	Bathurst
I B Egerton	Assoc	Lidcombe
M Keskin	VK2KDN	Lidcombe
M Matiszik	VK2SK	Bathurst
M C Riley	Asso	Coonabarabran
W Shand	VK2AXW	Wahroonga
J R Simon	VK2XGJ	Dapto
M Stofmeel	VK2MJZ	Wauchope
G M Uren	VK2NBF	Coogee
P van Gemert	VK2ALL	Bathurst
D Williams	VK2XDW	Mayfield

5/8 WAVE  
JENNIFER WARRINGTON VK5ANW

Well, it's nice to have some good news for a change! We have a new broadcast officer; our VERY grateful thanks to Murray Burford VK5ZQ who has volunteered to take on the job. (I wonder if it had anything to do with the good write-up I gave him last year?!) We hope that you enjoy the challenge, Murray. If you want to contact Murray, his phone number is (08) 276 3393, and his address is 261 Belair Rd, Torrens Park 5062.

Unfortunately, Arthur Tanner VK5AAR has had to relinquish the publications officer's job, due to a move in his work situation. Rowland VK5OU has asked me to say thank you Arthur, on behalf of himself and council, for the time you did spend in the job. (I can vouch for Arthur's enthusiasm; he sold me a log book one month and tried to sell me another the next — he must get through log books quicker than I do!) Ian Watson VK5KIA has offered to take over from Arthur, for which we are also very grateful. Ian has also agreed to go to Federal Convention this year as our alternate FC. Bill Wardrop VK5AWM is, of course, our federal councillor. The Clubs' Convention will be held 24-26 May at Ridgehaven Primary School, and we hope all clubs will be able to send a delegate.

The WIA, Adelaide Hills ARS and Christine Taylor VK5CTY, have co-ordinated their exams so that there will be an exam somewhere in the metropolitan area every month. Here are the future dates.

27 April	WIA-SA Div
May (late)	Christine Taylor
29 June	WIA-SA Div
27 July	AHARS
31 Aug	WIA-SA Div
Sept (late)	Christine Taylor
26 Oct	WIA-SA Div
Nov (late)	Christine Taylor
7 Dec	AHARS (please note, this is early in the month)

Adelaide Hills ARS elected the following into office at its AGM on 21 March:

President	Geoff Taylor	VK5TY
Vice President	Don Nairn	VK5DON
Secretary	Alan Haines	VK5ZD
Treasurer	Bryan Trott	VK5PBT
Committee		
Man	Rob Gurr	VK5RG
Committee		
Man	Phil Day	VK5QT

Meetings are held on the third Thursday at Blackwood High School, 7.30pm, and visitors are always made very welcome.

### Graham Ratcliff AM

Friends and fellow amateurs were delighted to learn that Graham VK5AGR, our federal AMSAT co-ordinator, has been made a Member of the Order of Australia, for his services to amateur radio organisations. Hearty congratulations Graham.

Now comes the news that another well-known amateur is also to be honoured. On Sunday 14 April, the Governor of SA, Dame Roma Mitchell, will present the Medal of Merit (a Scout Good Service award) to Don McDonald VK5ADD, at Government House, for his work with Scouts and Jamboree on the Air (JOTA).

Don was Project Commissioner for Scout Activities from June 1982 until March 1989, and during this seven years, the numbers participating increased markedly. Don was also responsible for a JOTA station at the 10th Australian Scout Rover Moot and the 15th Australian Jamboree, both held at Woodhouse in the Adelaide Hills. Don continues his involvement as Activity Leader in the Radio Activity Section, and with JOTA. Congratulations to you also, Don.

### Diary Dates

23 April	AGM 7.45pm
30 April	Buy and Sell

Watch for future meetings. Topics are to include: Local Repeaters, NZ Repeaters and Ian Hunt VK5QX and his aerial erecting trip around the Pacific Islands.

## VK6 NOTES

JOHN HOWLETT VK6ATA

During February the Peel AR Group held its second barbecue and get-together at the property of Alex and Mary at Lake Clifton. The event was good and deserves support; the numbers were down on last year due to a lack of advertising, and this will be addressed next year. To my knowledge this is the only country event in the state and serves to bring

country and city AR operators together in a social group.

The Hills AR group will be holding a radio-active rally on 7 April and all are invited. The rally course will take you through about 50km of lovely countryside at a leisurely place, the questions will not be too difficult and will help you appreciate the area. At the end of the rally there will be a barbecue at the clubrooms situated on the corner of Sanderson St, Lesmurdie. Make this a family day out and have some fun, catch up with some old friends

and make some new ones. Remember, this is a social event open to all operators and we hope you take advantage of it. Listen to the news broadcasts for full details or contact Fred VK6UR on 291 7360 if you have any questions.

The WIA AGM will be held on 16 April and if you can make it to the meeting, do so, as it is in your best interest. Eighteen members have nominated for the nine positions vacant, so please read the instructions. Fill in your ballot paper with care and return promptly.

## QSLs FROM THE WIA COLLECTION (28)

KEN MATCHETT VK3TL HON CURATOR WIA QSL COLLECTION  
PO Box 1 SEVILLE VIC 3139

### Guam — Hub of the Mariannas

The largest of the islands making up the Mariannas and centre of the island group's commercial activities, Guam lies some 2000km of so east of the Philippines and about halfway between Australia and Japan. The island is about 50km long and about 13km at its widest part. There are tropical forests, a mountainous interior and beautiful reef-protected beaches. The Mariannas themselves are geographically part of Micronesia. This area takes in the East Caroline Islands, Marianna Islands, the Marshalls, Republic of Belau and West Kiribati (formerly the Gilbert Islands). The word Micronesia is derived from two Greek words meaning "small islands" of which there are approximately 2000.

The Mariannas were discovered by the Portuguese navigator, Ferdinand Magellan, in the year 1521 during the course of the first circumnavigation of the world. The explorer did not have a high opinion of Guam, naming it "Isla de los Ladrones" (Island of Thieves), since he thought the natives had stolen one of his boats which was being used to ferry fresh fruit and vegetables to his ships. The modern name, Guam, is derived from that given to the island by the native peoples who called it Guahan, a name appearing on 18th-century maps of the area. Although the explorer himself was killed by natives of the Philip-

pines soon after leaving Guam, the reports of his discoveries of the Mariannas and the Philippines resulted in numerous expeditions by several nations. Magellan had renounced allegiance to Portugal and had sailed under the auspices of Charles V of Spain. It was this country that took possession of the island in 1565. Guam was to serve as an important supply station for Spanish trade between Mexico and the Philippines. Much of the culture of the indigenous peoples, the Chamorros, shows a strong Spanish influence, as does their native tongue. Even Guam's centre of administration, the Plaza de Espana, couldn't be more Spanish. Guam was ceded to the United States by the Treaty of Paris of 1898 which ended the Spanish-American War. Today a Trust Territory of the US, Guam is strongly American, with its hamburgers, bars, traffic rules and American currency. It remains an important strategic air and naval base for American Forces.

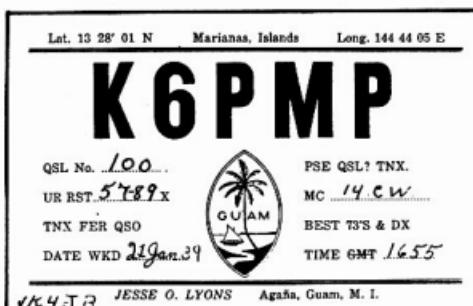
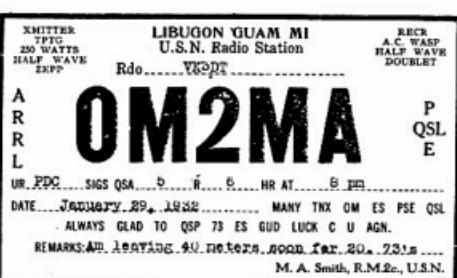
In the *Radio Amateur's Handbook* of 1927, Micronesia was shown as allocated the "intermediate" (precursor of the modern prefix system) OI, the first letter indicating the name of the continent, Oceania. (Australia had the intermediate OA at the same time). An asterisk after the OI was followed by a footnote that the allocation was "to be further partitioned when the activity warrants".

### OM2MA

The first amateur station on Guam was said to be OM1TB which operated in about 1928. The OM itself was an "intermediate" made up of O (Oceania) and M (Mariannas). After intermediates were replaced by official prefixes on 1 January 1929, the external territories of the United States were allocated the prefix K. (Mainland stations were allocated the prefix W). Only some external territories were specified by a numeral which followed the K prefix (eg K4 Puerto Rico, K7 Alaska), but apparently activity from Guam failed to warrant a specific prefix. Guam stations carried the OM prefix despite the official K prefix allocation. However, in the latter part of 1935, the FCC (Federal Communications Commission) ordered all unlicensed stations closed. The term "unlicensed" may come as a surprise to many of today's operators, but in those days the numbers of unlicensed stations (especially in Europe) was enormous. Guam stations were shut down for two months until the new K6 call was applied for. There was some objection by Guam operators having to share the K6 prefix with Hawaii, since their countries were so far apart. Nowadays the old OM prefix is used by Czechoslovakian stations for special events. The OM2MA QSL shown was sent by a US Navy member to Val, VK3DT (now VK2VS) back in January 1932.

### K6PMP

In 1932 Guam shared the K6 prefix with the Hawaiian Islands, but failed to warrant a



# KG6APJ



Greetings from Guam, M. I.



mention in some prefix lists of the day. Even up to 1937 some amateurs operating from Guam were using the old prefix OM. As explained in a footnote in *The Radio Amateur's Handbook* of 1936, this was an unofficial prefix (NX = Greenland, and NY = Panama Canal Zone fell into the same category). Just before the outbreak of World War II, Guam was sharing its K6 prefix with Hawaii, Midways Island, US Samoa and Wake Island, but both K6 and OM prefixes frequently appeared in DX country listings. The K6MPM QSL shown was sent from Agana (the capital city and centre of population on Guam Island).

## W9WUG/KB6

In 1938 a new prefix was allocated to Guam — KB6. The January 1939 edition of *Radio* presented a revision of the previous year's country prefixes with advice for the reader to note especially the new prefixes for the "Pacific Island Group". The KB6 (Guam) QSL is rather a rare card. The stations KB6CBN and KB6ILT were active in 1940 (America was not then at war). The W9WUG portable on Guam QSL is shown. It was sent to SK Cliff Pickering (then a short-wave listener) from the US 20th Air Force HQ. After the war, the KB6 prefix was taken up by the Baker, Howard, American Phoenix Group whilst Guam was allocated its KG6 prefix.



# KB6 GUAM

TWENTIETH AIR FORCE AMATEUR RADIO ASSOCIATION

W2A1M W2D1A W5C00 W5C0H W5GAB W5GVR W6DUF W6DUD W6L1I W6WUS

W6L2I W6L3I W6L4I W6L5I W6L6I W6L7I W6L8I W6L9I W6L10I

W6L11I W6L12I W6L13I W6L14I W6L15I W6L16I W6L17I W6L18I W6L19I

W6L20I W6L21I W6L22I W6L23I W6L24I W6L25I W6L26I W6L27I W6L28I

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W6L38I W6L39I W6L40I W6L41I W6L42I W6L43I W6L44I W6L45I W6L46I

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W6L853I W6L854I W6L855I W6L856I W6L857I W6L858I W6L859I W6L860I

W6L861I W6L862I W6L863I W6L864I W6L865I W6L866I W6L867I W6L868I

W6L869I W6L870I W6L871I W6L872I W6L873I W6L874I W6L875I W6L876I

W6L877I W6L878I W6L879I W6L880I W6L881I W6L882I W6L883I W6L884I

W6L885I W6L886I W6L887I W6L888I W6L889I W6L890I W6L891I W6L892I

W6L893I W6L894I W6L895I W6L896I W6L897I W6L898I W6L899I W6L900I

W6L901I W6L902I W6L903I W6L904I W6L905I W6L906I W6L907I W6L908I

W6L909I W6L910I W6L911I W6L912I W6L913I W6L914I W6L915I W6L916I

W6L917I W6L918I W6L919I W6L920I W6L921I W6L922I W6L923I W6L924I

W6L925I W6L926I W6L927I W6L928I W6L929I W6L930I W6L931I W6L932I

W6L933I W6L934I W6L935I W6L936I W6L937I W6L938I W6L939I W6L940I

W6L941I W6L942I W6L943I W6L944I W6L945I W6L946I W6L947I W6L948I

W6L949I W6L950I W6L951I W6L952I W6L953I W6L954I W6L955I W6L956I

W6L957I W6L958I W6L959I W6L960I W6L961I W6L962I W6L963I W6L964I

W6L965I W6L966I W6L967I W6L968I W6L969I W6L970I W6L971I W6L972I

W6L973I W6L974I W6L975I W6L976I W6L977I W6L978I W6L979I W6L980I

W6L981I W6L982I W6L983I W6L984I W6L985I W6L986I W6L987I W6L988I

W6L989I W6L990I W6L991I W6L992I W6L993I W6L994I W6L995I W6L996I

W6L997I W6L998I W6L999I W6L1000I W6L1001I W6L1002I W6L1003I W6L1004I

W6L1005I W6L1006I W6L1007I W6L1008I W6L1009I W6L10010I W6L10011I W6L10012I

W6L10013I W6L10014I W6L10015I W6L10016I W6L10017I W6L10018I W6L10019I W6L10020I

W6L10021I W6L10022I W6L10023I W6L10024I W6L10025I W6L10026I W6L10027I W6L10028I

W6L10029I W6L10030I W6L10031I W6L10032I W6L10033I W6L10034I W6L10035I W6L10036I

W6L10037I W6L10038I W6L10039I W6L10040I W6L10041I W6L10042I W6L1004

# SILENT KEYS

DUE TO INCREASING SPACE DEMANDS OBITUARIES MUST BE  
NO LONGER THAN 200 WORDS

We regret to announce the recent passing of:

Mr Jim Brinkman	VK2IS
Mr E J Eastley	VK2VT
Ms Kath Smith	VK2ACP (2TY)
Mr J Howes	VK2DZS
Mr W A Faul	VK3AGZ
Mr Peter Fawcett	VK3APF
Mr R T McIntosh	VK3CIG
Mr W H Cure	VK7CV

## John William Howes VK2DZS

Jack passed away at the age of 74 years on 28 August 1990 after a short time in Calvary Hospital, Sydney.

Active on the HF bands right to the end, Jack will be sorely missed by members of the Radar Net where he was heard each week without fail. Before World War II, he was well known in the Sydney radio trade. He also held a pre-war amateur licence VK2ABS.

At the outbreak of war, Jack enlisted in the Army Signals Corps, later transferring to the RAAF as a radar technician. Following a time in the field, he was appointed to the Radar Training School as a Sgt Instructor, later receiving a commission as a Technical Officer.

At the end of the war, Jack, with his own hands, built the beautiful home at Oatley which he and his wife Verna occupied for the rest of their married life.

Jack worked in the STC Valve Laboratory. Later he took up employment with the University of Sydney in the Department of Physics, where he spent most of his time with the team which designed and built the Mills Cross Radio Telescope at Bungendore, NSW.

In retirement, Jack was always busy in his Oatley workshop on electronic projects, which included the construction of a top-quality electronic organ, on which he became a very fine musician. Jack was always ready to share his technical expertise with others. We honour him as a brother-in-arms and a distinguished radio colleague. We extend heartfelt sympathy to wife Verna and family.

**CHARLES HAMMER VK2DH**

**JOHN MARGIN VK4MX**

FOR THE RAAF RADAR GROUP

## Bill A Faul VK3AGZ

The death occurred on 17 February 1991 in Melbourne of "Bill" W A Faul, normally situated at 2/26 Fewster Road, Hampton, Victoria, after a short illness.

Bill was an old RAAF friend of mine from 1940, and we had been in frequent association with each other over the years. He originally

came from WA where, before the war, he was closely associated with the Scout movement.

We had only just returned from a trip together to WA before Christmas 1990, and suddenly he was taken ill and is now a silent key.

Bill was a reliable friend over many years to a number of people and will be missed greatly.

**FREDERICK J STIRK VK2ABC**

## Peter Fawcett VK3APF

Peter Fawcett VK3APF passed away in the Wangaratta Base Hospital on Monday 10 September after a short illness.

Peter was born in Melbourne in 1920, but moved with his family to Shepparton in 1937. After completing his education in Shepparton, Peter attended Pharmacy College in Melbourne, returning to Shepparton to work in pharmacy for 20 years.

He left Shepparton in 1969 to work in a pharmacy in Wangaratta for two years, before returning to his first love — radio — servicing communications equipment and TVs.

Peter was an early pioneer in VHF — all gear was home brew — and one of the few VHF stations in the Goulburn Valley area. The 10m band was his DX favourite. Peter will be missed by his many friends for his dry sense of humour and his wealth of knowledge and experience. Peter did not marry. We offer our sympathy to his sisters Pat and Judy and their families.

**BRUCE GILLIES VK3AGG**

## Jim Brinkman VK2IS

Jim Brinkman passed away on 5/12/90. He was 78 years old. He had received his Amateur Operator's Certificate of Proficiency in Radio-Telegraphy (Certificate No 1425) on 12 February 1935.

He retired OIC Coffs Harbour approximately 1975, continuing his active radio life with contacts from all over the world, until the last few months when his health suffered, and VK2IS was unable to continue and enjoy his love — Morse Code. He will be missed by his family and friends.

**OLGA BRINKMAN**

## Mr R A C (Bob) Anderson VK3WY

Died Box Hill Hospital 26/11/90, age 83. Bob's introduction to amateur radio came when he and the late Bob Cunningham, who

## Morseword No 49

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Across

- 1 Keen
- 2 Felines
- 3 Boyfriend
- 4 Crimes
- 5 Young Katherine
- 6 Mist
- 7 Mink
- 8 Consumer
- 9 Girl's name
- 10 Slaps

Down

- 1 Use recklessly
- 2 Successor
- 3 Area
- 4 Go under water
- 5 Ends
- 6 Flower
- 7 Ode
- 8 Set of rooms
- 9 He's an odd .....
- 10 Frost

Audrey Ryan © 1990

Solution Page 56

was also a chemist, worked together at Mt Lyell Laboratory. When this was taken over by ICI, Bob continued working there, holding a responsible position in the explosives section during the war years and subsequently in administration until retiring in 1970.

Although active on most amateur bands, he is best remembered for his service to amateur radio as Secretary of the Victorian Division for 17 years from the early 1930s to the late 1940s, having obtained his full licence and call sign in 1930. On retirement as Secretary, he was granted Life Membership, but continued with the Amateur Advisory Committee for some years.

He was also a member of RSGB and RAOCT, and was a member of the post-war Disposals Committee.

In latter years he was active on 160 metres with the coffee-break net, his last QSO being

just two weeks before he died. His friendliness and many talents will be long remembered by all who knew him.

Our condolences go to his son, daughter and her family.

**HERB STEVENS VK3JO**

### **Ted Corton VK2BEE**

Ted was born in 1933 at Surry Hills. He spent his early childhood at Dubbo where, at the age of seven, his father presented him with a Morse oscillator, sparking off an interest in radio.

At the age of 16 he embarked on his career as an apprentice with Stromberg Carlson in radio assembly and repair. Then, in 1954, he joined Masters TV as service manager; from there he started his own business in 1969, known as Corton's TV and Radio Service at

Padstow.

As family commitments declined, he decided to move towards semi-retirement so, in 1978, he closed his business and joined the DMR as a tollway operator at Waterfall.

Ted was quite active, not only in electronics, holding experimental and broadcasting qualifications, but was also involved in gold prospecting, opal mining and the jewellery industry. Also building and flying gyrocopters for DCA approvals.

On 16 July 1990 Ted suffered a tragic heart attack. He will be sadly missed by his many friends, some stemming from the St George Radio Society.

Ted leaves behind his dear wife Shirley, daughter Cheryl, son Allan and grandchildren.

**JOE VK2AJP**

ar

**HF PREDICTIONS.** Due to late arrival of copy, we regret that HF Predictions is missing this month. Ed.

## **OVER TO YOU**

**ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION BUT MUST BE LESS THAN 300 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS**

### **Code Not Only Problem**

The discussions on the possible shift of CW speed for novice licence holders from 5wpm to 10wpm relate to me, too.

Although I can read 5wpm, with my writing hand that is my full-concentration top-writing speed. I agree that CW is an international language.

This is spoken of clearly, with illustrations of the brevity in message handling which relates, and comment that it is understood in the language of the receiving operator, regardless of the language the sender talks in, in the book *QTC*, by a retired marine radio officer.

Contrast the frequently imprecise message format which may relate to use of voice modes.

What is the place, especially in emergency communication, of the 'black box' modes when you have NO mains (or engine-room) power to drive computer or display, or to lock dish onto satellite and hold it on, or, say, when list on the ship prevents dish from accessing satellite, let alone locking on? Or VHF when maximum output is out of a 2W hand-held?

Ten words per minute for Morse is very likely, even after a year or two of better than once-a-day practice — say 20 minutes a session — at taking down 10wpm, to trim this K call back to a Z call, even with frequent examination during that time.

I have no doubt that practice at reading 10wpm random groups at LEAST twice a day would make it comfortably readable. But normal FAST writing speed for me is close on 5wpm, requiring FULL concentration on using pen and paper.

To those who sound as though they are assuming writing skills like I had when I sat for my novice, may I wish that you never come to discover that those writing skills, like my running skills, are a matter of history.

I hope that your technical and regulations knowledge can be demonstrated, conceded, using present-day testing modes, to allow you to continue in the amateur bands, should some disaster like that take place.

**IAN CROMPTON VK5KIC**

**9 CRAIG ST  
RICHMOND 5033**

### **Exam "Rumblings"**

The Tropical Coast Amateur Radio Club started in June 1989, and has been going successfully for the past 18 months.

In the first months, before DoTC resigned the reins of the exams, the club produced three novice calls. Since then we applied for examiner status, which the club received with VK4AVG Ted at the helm. More recently, the club has produced four sets of exams with successful applicants, some being from other clubs in the area.

Some local amateurs have said that the exams were too easy. I would like to state that the exams were properly conducted, were produced from the DoTC computer bank and were further approved by DoTC Canberra.

These rumblings are not what I thought amateur radio is about. I have found the exams hard, and have been examined four times. Each time I learn a little more. If these exams were easy, then why am I still a novice at time of writing?

So, please, no more rumblings, and let's get

on with the hobby of amateur radio. It's comments like these which cause discontent.

Do you want these bands to become like the proverbial CB bands? If so, keep on the way you're going!

I find helping one another and being helped by someone is more productive, so let's get with it. I'm proud of my accomplishment; what about you?

Amateur radio for amateur people. Don't disgrace it!

**ALAN McCASKILL VK4LAM**  
**C/- BOX 1155**  
**INNISFAIL 4860**

### **Misleading Advertisement**

As you may well be aware, Realistic, through its Tandy division, is offering a 10m mono-band transceiver, the HTX100.

The rig offers an amateur with HF privileges the opportunity to work on an exciting band; however, the way in which Tandy has chosen to advertise this radio would quickly lead many people to believe that to "discover the fun of ham radio" is as simple as purchasing one.

Nowhere in their recent catalogue, where the rig is featured, did it once say that to operate the rig you require an amateur radio licence.

It is for this reason we need to pressure suppliers of amateur equipment to specify in the copy of the advertisement that it does require an amateur licence to operate the equipment.

**SCOTT WATSON VK2JSR**  
**"KALAGADOO"**  
**LINDENDALE 2480**

*A copy of the recent advertisement was attached. Tandy says "The need for a licence is prominently displayed on the top of the carton and in the equipment handbook" — Ed.*

## Ten-Metre Piracy

It is often said that if we do not learn from history, we are doomed to repeat it, and such is the case with the pirate problem on 10 metres.

It is commendable that people are annoyed about it and want something done, but if cheap 10m units are imported to Australia en masse we are definitely going to see history repeat itself.

In the past, at least one retailer not only sold 27MHz equipment to anyone, but went out and actively promoted CB on 27MHz. Dealers like this are no friends of amateur radio.

If cheap 28MHz units are made available by profit-seeking retail outlets, they will be made available to anyone, not only radio amateurs, and we will have the same wholesale piracy that led to the loss of the 11m band.

There is nothing wrong with the idea of increased activity on 10m, but under the present legislation the importation of cheap CB-type equipment would be like trying to put out a fire with gasoline.

At the moment, the pirates are in Asia, not home.

People seem reasonably certain the modulation is AM, with poor stability. Could they perhaps be skirt-detecting FM?

European CB units are FM and operate in the 28MHz region; perhaps some have found their way to Asia.

**JAMES ROBERTSON VK5KJR**  
PO Box 557  
NOARLUNGA CENTRE 5168

## Challenge Old Ideas

Well, that's it! It's taken me five minutes to go through the February 1991 issue of AR when it should have taken me at least 30 (plus a little re-reading later on). Why, because it didn't have any (not one article) of the material that your own marketing research has indicated we require (in the same issue, I might add) viz technical articles, particularly those of a beginning nature. You say that the membership hasn't sent in any appropriate articles.

Well, let's look to overseas publications and borrow from same in large doses; verbatim, if we have to, in order to get the show on the road.

You say that's not AR policy. Well, let's change the policy; these are critical times. We need some lateral thinking here and to challenge past concepts that have served a previous era. Such an infusion of other ideas and approaches will probably stir the "creative juices" of our own contributors in providing appropriate additional articles.

We have to be "market driven" and provide what customers want first and foremost. I'm sure our AR readers would not object to this freshness in approach. Our advertisers (who are a little thin on the ground) would, I be-

lieve, also welcome a newness in approach with the marketing concept.

**REG HARDMAN VK4XH**  
16 SUNNINGDALE AV  
ROCHEDALE 4123

*(Once upon a time AR did contain numerous reprints from other society magazines. For many years now, we have not needed to supplement our VK contributors in this way. Perhaps, rather than challenge an old idea, we will soon have to adopt it! Ed)*

## Fortress CW

Perhaps I expected too much from CW enthusiasts – the reaction to any suggestion of change is to defend to the death – what one might call the "Fortress CW" mentality.

I am not opposed to CW, nor am I a member of the dreaded "Anti-CW Lobby", however, I believe it is time for CW enthusiasts to accept a modicum of change – a little compromise in their own, and amateur radio's best interest – rather than defending Fortress CW till the walls come tumbling down.

I have previously suggested the compromise – CW as one of a small number of alternative topics for the Full Call.

Adopt this and you will cut the ground from under "Anti-CW Lobby" and be in an excellent position to promote the ongoing development of CW.

If you want to defend Fortress CW to the end, remember, when the fortress falls, as one day it will, you will find all will be lost, and this will be a sad thing.

As for VK2PA's comments, OTY Feb 91, re disabled people and CW – I trust I never read another letter like that in AR.

**GRAHAM B JACKSON VK3TFN**  
PO Box 39 UPPER BEACONSFIELD

## Final comment?

Re: Morse Code Grizzles  
Ho hum.

**IAN STANLEY VK3CIS**  
PO Box 70  
ORMOND 3204

## Parabolic Information?

I am interested in knowing what types of measuring devices are used in checking the measurement of parabolic curves such as parabolic dish antennas.

The Rayleigh limit states that little gain increase is realised by making the mirror accuracy greater than  $\pm 1/8 \lambda$  peak error.

Are there any measuring devices that involve the use of an ink needle and graph paper chart and length of light pipe or fibreglass with a wheel to walk on?

**PETER GUYER**  
"VALETTA" MSF 2281  
MOREE 2400

*(Can anyone help? Ed)*

## Translation Confusion?

"QSLs from the WIA Collection" is an interesting column and often unearths long-forgotten memories.

However, the February 1991 edition could cause VK3TL some embarrassment (perhaps from some quarters of ex-PAs and PKs now living in VK) as to his translation of PK1SCA's 1932 QSL. I agree, the card was badly designed, but the correct heading is: (first line) GENERAL HEADQUARTERS, (second line) "DE PADVINDERSBOND" RADIO DEPARTMENT. Location Bandoeng (Bandung), the site of the 1991 Region 3 Conference.

"Padvindersbond" means "Pathfinders ASSOCIATION", literally "Pioneers (or Scouts) Association". The Dutch language often has a number of (sometimes seemingly unrelated) meanings to the one word.

Finally, just a small item overlooked: The association was also a member of NIVIRA, the Netherlands East Indies Radio Society, which was formed in 1929 and officially recognised by the NEI Government as an incorporated body on 27 March 1931, ceasing operations in December 1949 with the independence of the republic of Indonesia. Note that, although the card states Bandoeng, Java, DEI, the official abbreviation was NEI.

Former NIVIRA members, now retired in the Netherlands and members of the PK-Club, will commemorate the 60th anniversary in April this year. No details are available at the time of writing this letter.

Keep up the good work Ken.

**JOHN AARSSE VK4QA**  
PO Box 211 NAMBOUR 4560

## Brazil DX Net

I have been asked by PT7BI Daniel to help publicise the Brazil DX Net, and I thought perhaps the best way to do it would be by having its timetable published in our magazine.

I believe that there must be a number of stations interested, because, almost every day, I have "breakers" in my schedules with a group of personal friends in Brazil, from where I came 23 years ago.

I have asked them to come down below 21.200MHz sometimes, to give the novices a chance to participate as well. I still remember my "agony" when I was VK2NWD back in 1978.

The Brazil DX Net is run in the English language and follows the timetable below:

Day	Frequency	UTC Time
Mon, Wed, Fri	14.240	0900
Tue, Thur	21.270	0900
Sat, Sun	28.530	1200

They informed me they have "lined up" an ET station for the next weekend, but it is too late now; and, as for me, I hate DX chasing, hi hi! I am a "rag-chewer", definitely.

If I can be of any assistance, I am only too pleased to help.

**T DE AGUIAR VK4BAG**

20 ADELAIDE CIRCUIT BEENLEIGH 4207







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The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

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HF Antennas - Moxon RSGB	\$27.00		
Novice Antenna Notebook DeMaw - ARRL	\$14.40		
Practical Wireless ARRL - RSGB	\$25.20		
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Smith Charts Stand Scale SET Co-Op. PK of 10	\$5.94		
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The Show Scan Companion - BATC	\$11.70	Low Band DX - John Devoldere	BX195 \$10.80
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Radio Call Book International 1991	\$56.25	Prefix Map - The World Flat on Heavy Paper	BX335 \$14.40
Radio Call Book North America 1991	\$52.65	Prefix Map of North America	BX235 \$7.20
Radio Call Book Supplements 1991 Due June	\$15.75	Prefix Map of the World	BX234 \$7.20
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Radio Frequency For Amateur Operators - Swainston	\$36.66	Gateway to Packet Radio 2nd edition - ARRL	BX169 \$21.60
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Radio Frequency Interference - ARRL	\$8.55	Oscar Satellite Review - Ingram	MFJ31 \$15.30
<b>MISCELLANEOUS</b>			
midon Ferrite Complete Data Book	\$7.65	Satellite AMSAT-NA 5th Symposium 1987 - ARRL	BX182 \$15.75
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Help For New Ham DeMaw - ARRL	\$18.00	Satellite Experimenters Handbook 1990 edition	BX177 \$36.00
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If the item is carried by your Divisional Bookshop, but is not in stock, your order will be taken and filled as soon as practicable. All prices are for WIA members only - postage and packing, if applicable, is extra.

All orders must be accompanied by a remittance.

# Wide Band Receivers...



**ICOM** has broken the barriers with its new line of wideband receivers built to go the distance. Introducing the IC-R1 handheld receiver, the IC-R72 HF receiver and the IC-R100 multi-purpose receiver.

**IC-R1.** The smallest wideband handheld available today, the IC-R1 continuously covers 100kHz-1300MHz (Specifications Guaranteed 2-905MHz) with AM, FM and Wide-FM modes. This tiny receiver measures just 241mmW x 94mmH x 229mmD.

Easy operation is a snap with the IC-R1's Dual Frequency Selection (direct keyboard and rotary tuning), 100 memories and a 24-hour clock completes the world's smallest full-featured handheld receiver.

**IC-R100.** Install the IC-R100 at home or in your car. Listening pleasure is guaranteed

with continuous coverage from 100kHz-1856MHz (Specification Guaranteed 500kHz-1800MHz) in AM, FM and wide FM modes. Monitor VHF air and marine bands, emergency services, government as well as amateur stations. 121 fully programmable memory channels, multiple scanning system, an automatic noise limiter, built-in preamplifier and attenuator, clock with timer and built-in backup lithium battery make the IC-R100 the perfect package for mobile or base operation.

**IC-R72.** The IC-R72 continuously receives 100kHz-30MHz in SSB, AM and CW modes with very high sensitivity. An optional UL8 provides FM reception. Additional features include: Noise blower, five scanning systems, AC/DC operation, internal backup battery, built-in clock and ICOM's DOS System. The IC-R72 boasts a 100dB wide dynamic range while

an easy-to-access keyboard provides convenient programming versatility. The easy to operate IC-R72 is superb for short wave listeners.

The IC-R1, IC-R72 and IC-R100 join ICOM's current line of professional quality receivers... the IC-R71A, IC-R7000 and IC-R9000. ICOM... expanding the horizons to bring you better technology, today. See the complete line of quality ICOM receivers at your local authorized ICOM dealer today.

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First in Communications

## ...That Go The Distance.

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ICOM Australia's One Year Warranty is only applicable to products purchased from their authorised Australian Dealers. ICOM Australia's fully equipped service centre in Windsor, Victoria, is staffed by engineers from ICOM Japan and is available for after sales support.